

DEPARTMENT OF AGRICULTURE

REPORT

OF THE

DAIRY AND COLD STORAGE
COMMISSIONER

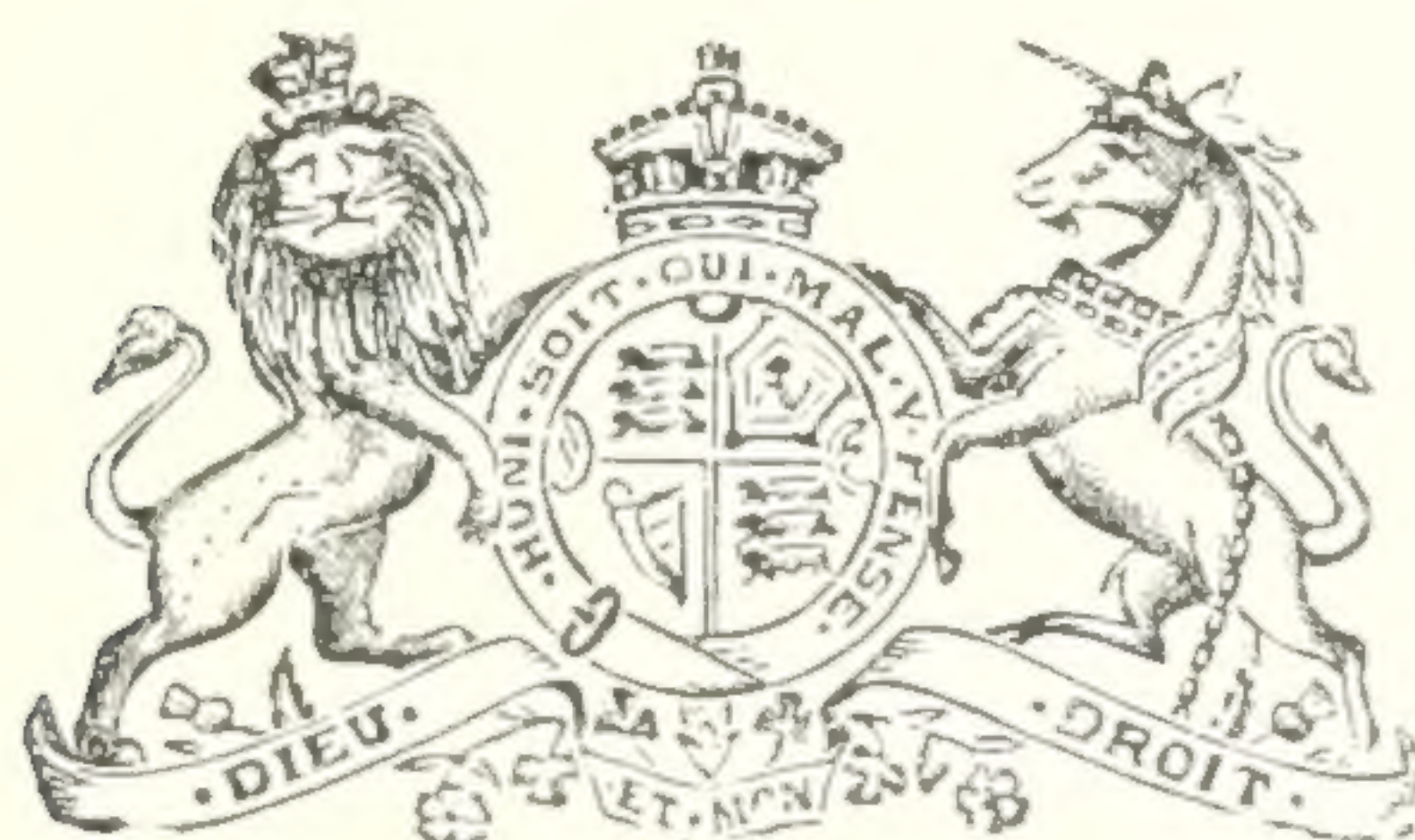
FOR THE

FISCAL YEAR ENDING MARCH 31

1915

Dairying, Fruit, Extension of Markets and Cold Storage

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REPORT
OF THE
DAIRY AND COLD STORAGE
COMMISSIONER

OTTAWA, March 31, 1915.

To the Honourable

The Minister of Agriculture.

SIR,—I have the honour to submit my report as Dairy and Cold Storage Commissioner in your department for the year ending March 31, 1915.

The appointment of a Fruit Commissioner on May 1, relieved me of responsibility for the Fruit Division and will permit, when the war is over, of some new lines of dairy work being taken up.

VISIT TO GREAT BRITAIN AND SWITZERLAND.

Having been appointed Canadian government delegate to the VI International Dairy Congress, which was held June 8 to 12, at Berne, Switzerland, I sailed from Montreal on May 25 and proceeded direct to Switzerland to take part in that great gathering. As I have already referred to the proceedings of this congress in other publications and at public meetings, I do not propose to deal with the matter further in this report.

On my return to England from the continent, I took advantage of the opportunity to call on many of the leading dairy produce merchants in London, Bristol and Liverpool, for the purpose of discussing with them the outlook for Canadian produce in the markets of the United Kingdom. The time at my

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disposal did not permit of a visit to that important centre for Canadian trade, the city of Glasgow, but I had the pleasure of meeting some of the leading Glasgow merchants in London and other places.

The merchants whom I met expressed regret at the decline in the exports of dairy produce from Canada, and were glad to be informed that this country was not likely to drop out of the cheese exporting business, a contingency which they had been led to believe was among the near possibilities.

Canadian cheese has attained a distinct place in the trade of the United Kingdom. It has no real rival. Even the New Zealand article, annually increasing in quantity, does not come into very close competition on account of the opposite seasons. Canadian cheese is the standard for all importations. Very few complaints are heard as to its quality, although serious objection is raised respecting the immaturity of a large proportion of the arrivals. The flimsy character of the boxes is also commented on. This defect becomes all the more noticeable when our cheese is compared with that from New Zealand carried as it is in strong, durable crates.

I accepted an invitation to address the members of the Liverpool Produce Exchange, while in that city, and was thus afforded an opportunity of meeting representatives of most of the firms dealing in Canadian produce.

CARGO INSPECTORS.

This visit to England gave me an opportunity of looking over the work of the cargo inspectors employed under this branch at London, Liverpool, Bristol, and Glasgow. The Department has been fortunate in securing for these positions most capable and efficient officers who take a deep interest in their work, and whose reports, which come to the office regularly, are of much assistance to us in our efforts to improve the trade in food products with the United Kingdom. All the inspectors are local men who have had experience in the produce or fruit trades at the ports where they are employed, and they have been selected on account of their special fitness for the work which they are entrusted with.

THE CHESHIRE CHEESE INDUSTRY.

While in England I spent a short time visiting the district where the famous Cheshire cheese is made, and which in its modern character probably competes with the cheaper grades of Canadian cheese more than that from any other source of supply.

The principal centre for the Cheshire cheese industry is Whitchurch in Shropshire. A prominent Glasgow cheese merchant, who operates largely in the district, and who knows Canada well, made the assertion that more cheese is produced within a radius of 30 miles of Whitchurch than there is in the whole of Canada. After visiting a number of farms in parts of Shropshire, Denbigh, Flintshire and Cheshire, I do not feel so much like disputing the statement as I did when I heard it made. On a farm of 90 acres I found 60 cows being milked with individual records as high as 12,000 pounds annually. On this farm,

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as on others in the district, the prevailing breed is grade shorthorn. The cheese is all made on the farms, generally by the farmer's wife or daughter. An excellent training is received by the cheesemakers at the Worlestan Dairy Institute near Nantwich.

I have referred to the modern Cheshire cheese. It differs, at least the bulk of it, from the historic type in that it contains more moisture and is made to be put on the market much earlier than formerly. The ruling price is several shillings a cwt. lower than for No. 1 Canadian or English and Scotch Cheddars.

THE WORK OF THE BRANCH, APPOINTMENTS DURING THE YEAR.

Apart from the separation of the fruit division, there has not been much change in the organization of the branch during the year.

The chief additions to the staff were in the appointment of Mr. Edwin Smith, B. Sc., to take charge of the pre-cooling and experimental fruit storage warehouse at Grimsby, Ont., Mr. J. F. Singleton as chief inspector of dairy products and Mr. J. E. D. Gareau as inspector of weighing of butter and cheese.

EXTENSION OF MARKETS DIVISION.

The usual services have been maintained during the year, but following the outbreak of war there was more or less disorganization in the work of cargo inspection, on account of the number of regular liners that were requisitioned by the Admiralty.

The iced butter car services were operated by the railways under the guarantee which has been given for a number of years, and about the same number of iced cars for cheese were supplied, on request of the shippers, as in former years. These services have proved of great value to the dairy industry, and the advantage of cool transportation for butter and cheese are now much more fully appreciated by shippers than they were before such facilities were so generally available.

The compilation of farm prices was continued during the year. These prices, with a statement respecting the other work of the division, will be found in appendix II which has been prepared by Mr. W. W. Moore.

FINCH AND BROME DAIRY STATIONS.

These two establishments have been continued as model factories both in the matter of equipment and in the manner of their operation. They also afford convenient facilities for practical tests of apparatus and investigations or experiments in connection with the manufacture of butter and cheese. Some very useful work has been carried out during the year. The details will be found in the report of the Chief of the Dairy Division, appendix III.

DAIRY HERD RECORDS.

By propaganda, and through the actual work of the dairy record centres, the keeping of records of individual cows has been extended during the year. The value of this work is becoming more apparent every year in the increased

average yield of milk, not only in those herds which are regularly tested, but for the country generally. The prominence which has been given to the whole question of herd improvement has resulted in greater attention being given to the selection of sires, and to the care and feeding of cows. Farmers are realizing as never before that a cow cannot be a big producer unless she is well fed, and that feed converted into milk generally finds a better market than it does in its raw state.

An interesting compilation of the milk records has been made by Mr. C. F. Whitley, who has charge of this part of the work (see appendix IV). A glance at these figures will show the necessity for studying the performance of individual cows as a basis for general improvement. The records also show what has been accomplished where intelligent effort has been applied in this direction.

Mr. H. W. Coleman, supervisor of cow testing for Ontario, Mr. J. B. E. Trudel, who fills the same position for Quebec, and Mr. Harvey Mitchell in the Maritime provinces, tell of the progress of the work in their respective territories. (See appendices V, VI, and VII.)

EXCESS OF WATER IN BUTTER.

The Dairy Industry Act, 1914, fixes the legal limit of water in butter at 16 per cent. Adding an excess over this limit has been the most common offence under the Act, and a number of convictions have been secured. Violations of this kind may be classed under two heads. First there are butter manufacturers' who in their desire to make as large a yield as possible keep so close to the limit that they occasionally overstep it. It must be admitted that in some cases there is evidence of wilful violation. The other class of offender is the dealer who deliberately reworks butter for the purpose of adding water. Some of those who handle low grade butter have been found adding as much as 20 per cent in excess of the legal limit. This is a fairly profitable business, and at the same time a most despicable form of swindling, and requires watching.

The Regulations under the Act prescribe the manner in which "whey" and dairy butter shall be branded. It has taken some time to make dairy butter makers acquainted with the provisions of the law, and the policy so far with respect to farm buttermakers, has been one of education rather than of prosecution.

The experience of a year's administration of the law points to a necessity for further regulations to permit of the seizure of apparatus and material either in cases of persistent offenders, or in cases of the more important violations, such as attempts to manufacture spurious butter or to mix with butter any of the cheaper and inferior vegetable or animal fats. Violations of this kind are happily not numerous. (See details by Inspector Singleton in appendix IX.)

INSPECTION OF WEIGHING OF BUTTER AND CHEESE.

Following the report and recommendations of the Commission on the Weighing of Butter and Cheese, Mr. J. E. D. Gareau was appointed to the position of Inspector of Weighing of Butter and Cheese, with headquarters at Montreal. The cheese factory and creamery salesmen were notified that it would be the

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Inspector's duty to investigate any complaint regarding the weight of butter or cheese as reported at Montreal. Mr. Gareau gives a brief review of his work in appendix XI.

I am pleased to add that judging by the lack of complaints since Mr. Gareau's appointment his work has been very successful. His findings reported from time to time bear out the conclusion of the Commission that much of the trouble arose from defective scales in use at the factories and because the cheese was often weighed and boxed in a very green condition and several days before it was shipped.

THE PRE-COOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE AT
GRIMBSY, ONT.

The erection of this warehouse was authorized by you during the year 1913-14, and it was nearing completion at the beginning of the year under review. Everything was in readiness at the opening of the fruit season of 1914, with Edwin Smith, B.Sc., in charge.

The season of 1914 was abnormal owing to the complete failure of the peach crop in the Niagara district, but a considerable quantity of other fruit was handled, either for pre-cooling before shipment or for short term storage. There were also received some apples for winter storage.

A good start was also made in the scientific work which has for its object the collection of reliable data as to the best temperature for carrying different kinds of fruit, the proper stage of maturity, the effect of various styles of packing etc.

Mr. Smith gives an account of the season's operations in appendix X.

COLD STORAGE.

The active cold storage work of the branch has been confined chiefly to the Grimbsy Pre-Cooling and Experimental Fruit Storage Warehouse, which is referred to in another paragraph.

The administration of the Cold Storage Act, under which subsidies are paid for the erection of public cold storage warehouses, is largely a matter of routine which goes on year after year without much change. The same may be said of the payment of bonuses to creameries for the erection of suitable refrigerators.

Plans and specifications for small cold storages are furnished to farmers, grocers, and others who desire to provide themselves with cheap cooling facilities for various products.

No Regulations have yet been made under The Cold Storage Warehouse Act of 1914, and therefore the Act is practically inoperative.

Mr. Jos. Burgess, Cold Storage Inspector, reports on the payment of creamery cold storage bonuses and his work as inspector under the Cold Storage Act will be found in appendix VIII.

PUBLICATIONS.

In addition to the annual report and articles and notes prepared for the Agricultural Gazette, the following bulletins and circulars were issued during the year:

Bulletins.

42. The Dairy Industry Act, 1914, and Regulations.
43. The Cold Storage Act, 1907, as amended in 1909, and Regulations.

Circulars.

11. Revised List of Apple Dealers in Northern Ontario, Manitoba, Saskatchewan, and Alberta.
12. Branding Dairy Butter.

MEETINGS.

I have personally not been able to attend as many meetings as usual on account of the exacting nature of my duties on behalf of the War Office.

Messrs. Chapais, Barr, Whitley, Burgess, Singleton, Smith, Coleman, Trudel and Mitchell have attended numerous meetings in different parts of the country.

I have pleasure in testifying to the faithful services of the various officers and the clerks at headquarters.

The outside men have, with few exceptions, proved industrious, capable and reliable.

I have the honour to be, sir,

Your obedient servant,

J. A. RUDDICK,

Dairy and Cold Storage Commissioner.

APPENDIX I.

REPORT OF THE ASSISTANT DAIRY COMMISSIONER.

SAINT-DENIS (EN BAS) COUNTY OF KAMOURASKA, QUE.

The present date of March 31, 1915, closes the twenty-fifth year which has elapsed since my appointment as Assistant Dairy Commissioner for the Dominion of Canada. I have thought it fitting at this anniversary to present my annual report under the form of a brief summary of the work which I have done during that lapse of time.

I will first make a short analysis of my last year's work, from April 1, 1914, to March 31, 1915.

SUMMARY OF WORK IN 1914-15.

I have done less work than usual in my capacity as Assistant Dairy Commissioner on account of the fact mentioned in my last year's report, that, since August, 1913, to my duties as such have been added those of Assistant Commissioner of Agricultural Instruction for the province of Quebec.

In the provinces of Ontario and Quebec, I have, during the last twelve months, made, in fourteen counties, twenty-four visits in twenty-three localities. I have delivered thirty-nine lectures before 4,470 persons, of whom 207 were butter and cheesemakers. The average attendance at these lectures was 131 persons. I have travelled 5,416 miles to perform my work.

I give here a list of the counties and localities visited, and where I have delivered lectures, with reference letters indicating the purpose for which the meetings were called.

TABLE OF VISITS AND LECTURES.

Counties.	Localities.	Visits.	Lectures.	Letters of Reference.
	<i>Province of Ontario.</i>			
Ottawa.....	Ottawa city.....	1	1	a
Toronto.....	Toronto city.....	1	—	a
	<i>Province of Quebec.</i>			
Berthier.....	St. Gabriel de Brandon.....	1	1	a
Brome.....	Sutton.....	1	1	b, c
Compton.....	Compton.....	1	1	c
	Paquetteville.....	1	1	c
	St. Edwidge of Clifton.....	1	1	c
	St. Henry of East Hereford.....	1	1	c
	St. Isidore of Auckland.....	1	1	c
	St. Malo of Auckland.....	1	1	c
Gaspé.....	Cape Cove.....	1	1	c
Jacques Cartier.....	Macdonald College.....	1	2	a
	".....	—	2	a, d
Kamouraska.....	Ste. Anne de la Pocatière.....	1	1	b
	St. Denis.....	1	1	c
	St. Paschal.....	1	1	b
Lake St. John.....	Roberval.....	1	8	b, c
Montreal.....	Montreal city.....	1	1	a
Richmond.....	Stoke Center.....	1	1	c
Rouville.....	Abbotsford.....	1	1	a
	".....	—	1	a, d
Sherbrooke.....	St. Elie d'Orford.....	1	1	c
Stanstead.....	Barford.....	1	1	c
	Stanstead.....	1	1	b, c
Two Mountains.....	La Trappe, Oka.....	2	5	a, c
15	23	24	39	

Reference letters indicate: (a) Federal and provincial meetings; (b) County and district meetings; (c) Farmers' Club meetings; (d) English lectures; (e) Visits in colleges and schools.

The above table shows that I have attended seven federal and provincial meetings, five county and district meetings, have delivered eleven lectures before Farmers' Clubs, eleven in schools of domestic science, and four lectures in colleges and schools, three of which were delivered in English.

FEDERAL AND PROVINCIAL MEETINGS.

The first provincial meeting attended during the last twelve months was the decennial congress of the Catholic Association of the Young French-Canadians, held at Montreal, on June 29. I read before that congress a paper on "The Land and the Social Duties." The second was the annual convention of the Agricultural Missionaries of the province of Quebec, held at the Central Experimental Farm, Ottawa, on the 15th and 16th of July, before which I read a paper on "A few Laws of Interest to the Farmers." The third one was the summer convention of the Pomological Society of the province of Quebec, held at Abbotsford, Rouville county, on September 10 and 11, at which I delivered a lecture on "Latitude in Relation with Rusticity." The fourth was the annual convention of the Ontario Entomological Society held at Toronto on the 4th and 5th of November. The fifth was a meeting of the Federal French Agricultural lecturers held at La Trappe, Oka, on the 10th and 11th of February, before whom I delivered three lectures on "Patriotism and Production". The sixth was the

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annual convention of the Dairymen's Association of the province of Quebec, held at St. Gabriel de Brandon, Berthier county, on March 3 and 4, at which I gave an address entitled "Historical Notes on the Quebec Dairy Syndicates." The seventh was the winter convention of the Quebec Society for the Protection of Plants, held at Macdonald College, on March 11, before which I read a paper on "*Aphrophora Spumaria*."

COUNTY AND DISTRICT MEETINGS.

I have attended five of these meetings. The first one was at Stanstead, Stanstead county, the second at Sutton, Brome county, and the third one at Roberval, Lake St. John county. In those localities, I gave ten lectures on various topics concerning domestic science, the meetings have been held in the young ladies' domestic science schools. The two other meetings were held, one at Ste. Anne de la Pocatière, and the other at St. Paschal, both in Kamouraska county, the first one being the annual convention of the Kamouraska Co-operative Society, the second one being the annual convention of the Kamouraska County Horticultural Society.

LECTURES BEFORE FARMERS' CLUBS.

The other lectures were delivered, eleven in number, before various farmers' clubs in eleven parishes situated in six counties.

OFFICE WORK.

Besides my usual work as Assistant Dairy Commissioner, such as official reports and correspondence, as well as that called for in the filling of my position as Assistant Commissioner of Agricultural Instruction, I have written for the agricultural press, during the last twelve months, thirty papers, memoranda and articles.

TWENTY-FIVE YEARS OF WORK AS ASSISTANT DAIRY COMMISSIONER.

On the first day of February, 1890, the Federal Government at Ottawa, appointed Prof. James W. Robertson as Dairy Commissioner, and placed him at the head of the newly organized branch of dairying, in connection with the federal Department of Agriculture, with the mission of "ensuring, by way of bulletins, meetings and lectures, the diffusion amongst the agricultural classes of the best and most economical methods of manufacturing butter and cheese, and of feeding cattle so as to attain the best results in the production of milk."

The first of April following, I was appointed as Assistant Dairy Commissioner and entrusted with the task of diffusing the same knowledge amongst the French-speaking population.

It was understood that my work was to be one of organization and education, and I have, during this period of twenty-five years—fourteen years and nine months under Prof. James W. Robertson and ten years and three months under you—made strenuous efforts to give it the greatest possible efficiency. That work consisted in attending: (1) Federal and provincial conventions of dairymen, horticulturists, pomologists, agricultural missionaries, and agricultural societies; (2) county and district conventions such as dairy institutes, farmers' institutes, local dairymen's associations, meetings for the organization of factory

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syndicates, of county agricultural co-operative societies; (3) farmers' club meetings; (4) ordinary parish meetings; (5) courses of students of the St. Hyacinthe dairy school; (6) meetings of students in colleges and schools, such as agricultural colleges and schools, domestic science schools, and delivering lectures before most of those gatherings.

Besides that work I have made numerous inspections of cheese and butter factories, cold storage rooms, etc.

PARTICULARS OF LECTURES.

During that period of twenty-five years I have delivered 280 lectures before federal and provincial conventions; 515 before county and district meetings; 809 before farmers' club meetings; 249 before ordinary parish meetings; 1,238 to the students of the St. Hyacinthe Quebec provincial dairy school; 97 before meetings of students in colleges and schools; and I have made 1,021 dairy factory inspections.

The federal and provincial meetings I have attended were held in Ontario and Quebec; the county and district meetings were held in Ontario and Quebec; the farmers' club meetings were held in Quebec; the ordinary locality and parish meetings were held in Prince Edward Island, New Brunswick, Quebec, Ontario, and Manitoba; the meetings in colleges and schools were held in Ontario and Quebec; the factories that I have inspected were in Manitoba and Quebec.

The following figures show all the details pertaining to the delivering of my lectures, in the various provinces of the Dominion:—

Provinces visited.	Counties visited.	Lectures delivered.	English lectures.	Farmers met.	Makers met.	Miles travelled.
5	91	3,632	474	370,840	12,534	1,947,184

The number of counties visited in each province is as follows: Manitoba, four; New Brunswick, eight; Ontario, nine; Prince Edward Island, four; and Quebec, sixty-eight.

The 3,632 lectures were delivered as follows, by provinces.

Manitoba.	New Brunswick.	Ontario.	Prince Edward Island.	Quebec.
43	31	62	9	3,587

Though my work was supposed to be made amongst a French-speaking population, I have had to comply frequently with the wishes expressed, in many mixed meetings, when there were English-speaking persons, by speaking in their language. I have always on these occasions very willingly delivered lectures in English for the convenience of everybody. These English lectures were specially a necessity at the St. Hyacinthe provincial dairy school, in Quebec, where students of both languages came to take the courses in English and in French. The number of lectures thus delivered in English has been 474.

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I have made an allusion, above, to meetings held for the organization of factory syndicates, to the courses of students of the St. Hyacinthe dairy school and to meetings in colleges and schools. I wish to make a few remarks on those two points.

FACTORY SYNDICATES.

As to the organization of syndicates, which has been one of the salient points of co-operative dairying in the province of Quebec, I think it is well to say in a few words what that organization was.

The Quebec Dairymen's Association was the first society in the Dominion acting jointly with the Department of Agriculture of Quebec to organize cheese and butter factory syndicates. Through that organization the association endeavoured to obtain from the syndicated factories: first, a constant attention to the testing of the milk of the patrons and to receive from them milk of the best possible quality; second, a scrupulous attention to the general tidiness and cleanliness of the factories; third, a uniform system of book-keeping, sufficient to ensure the accuracy and integrity of the monthly and yearly reports of operations of the syndicated factories. In 1890 there were only three syndicates in Quebec. Their number increased rapidly until, last year, seventy-five were in operation. That organization of syndicates which has, this year, been in existence for twenty-five years, is being put aside to make place for another which is meant to be still more perfect than that one was. Time will tell.

ST. HYACINTHE DAIRY SCHOOL.

The St. Hyacinthe dairy school in Quebec was opened in 1893. During the first three years of its existence, it was under the supervision of the Dominion Dairy Commissioner. From that time to 1907 it has been managed by a board of three directors appointed, one by the Federal Department of Agriculture, one by the Quebec Department of Agriculture, one by the Quebec Dairymen's Association, which had organized it and owned it till 1906. I have represented the Federal Department of Agriculture on that board from 1895 to 1906, and have been the president of the board for many years. Courses are opened at that school and theoretical and practical lectures are given in French and in English. Diplomas are conferred on the makers who qualify themselves to obtain them. I have given some of these lectures to the students from 1895 to 1906.

MEETINGS IN COLLEGES AND SCHOOLS.

I will add a few remarks on a move that was made a few years ago, in the province of Quebec, to give a new direction to the instruction of farmers' sons in the rural schools. For a long time, agronomists, as well as those who deal in rural economy, have studied the very difficult problem of agricultural teaching in schools. As agriculture suffers from want of workers, owing to emigration of country people to town or manufacturing centres and to the aversion shown by farmers' sons for their fathers' station in life, it was hoped that it would be useful to have delivered, in country colleges and high schools, lectures on the advantages offered by agriculture as a career for the young people. The reverend brothers of seven teaching institutes of the province of Quebec, who are at the head of a large number of colleges and schools, asked me to devote a little of my time, while travelling to deliver other lectures, to the delivering of lectures of that kind before their pupils, and I thought I should accede to their wish.

OFFICE WORK.

Through all my travelling, very little time, comparatively, was left me for office work. As I have a very large correspondence, much writing to do to prepare my various lectures, which have all been put in print, and as I have written for the agricultural press, since 1890, over 750 papers, essays, articles, memoranda and reports on various agricultural topics, I may say that I have never felt lonesome for want of work.

CLOSING OF A QUARTER OF A CENTURY'S WORK.

With these few remarks, I finish here my twenty-fifth report which, I hope will meet your approval as showing part of what our branch of the Federal Department of Agriculture has done (as far as I am concerned) for the progress and welfare of the French dairymen and farmers of Canada, during this last quarter of a century.

J. C. CHAPPAIS,
Assistant Dairy Commissioner.

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APPENDIX II.

REPORT OF THE CHIEF, EXTENSION OF MARKETS DIVISION.

SIR,—I have the honour to present herewith the report of the Extension of Markets Division for the year ending March 31, 1915.

SUPPLIES FOR THE BRITISH ARMY IN FRANCE.

As you are aware, since the first of October, 1914, my time has been almost entirely taken up in assisting you in the purchase and shipment to France of hay and oats for the account of the Imperial Government, and with the supervision of the hay-compressing plant at Montreal. At the time of writing, this work is still going on and as it is impossible for me to give much time to the preparation of this report I have therefore condensed and abbreviated it as much as possible.

REFRIGERATOR CAR SERVICE FOR BUTTER, CHEESE AND FRUIT.

As heretofore, under special arrangement with the railway companies, refrigerator car services were operated during the past season for the carriage of butter to the various market centres in Canada, and for the transportation of cheese and fruit to Montreal and Quebec. The usual number of inspectors were employed at the railroad terminals in Montreal, Quebec, and Halifax, and the services were well maintained by the railroad companies.

THERMOGRAPH RECORDS.

During the past year, 379 records of temperature were obtained in steamers sailing from Montreal and Quebec, and 107 records in steamers sailing from Halifax to ports in Great Britain. These records gave the temperatures in cold storage chambers, cooled air compartments, and in the ordinary holds in which were carried different varieties of fruit, cheese, bacon, meats, etc. Over two thousand copies of these records were made in this office and sent to shippers, steamship companies, and others interested.

FARM PRICES.

In this report will be found a statement showing prices received by farmers for their principal products during each month of the year under review. These prices have been compiled from monthly reports made by dairy recorders who are stationed in various parts of Ontario, Quebec, and the Maritime Provinces, and whose duties require them to visit the farmers in their districts regularly each month. With the exception of the information furnished by each decennial census, no statistics of this character have hitherto been available in Canada.

CARGO INSPECTION SERVICES.

During the past fiscal year the cargo inspection staff has consisted of six men at Montreal and one at Quebec for seven months; four men in Great Britain and one at Halifax the year round.

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For several months after the outbreak of war the shipping trade between Canada and Great Britain was disorganized, and during the autumn months there was considerable detention of cargoes at ports in Great Britain, particularly London. The congestion at that port was so great that ships were unable to discharge their cargoes for weeks, and in some cases material damage was caused to perishable products such as apples, cheese, etc. During the winter months there was not much to complain of in this respect, the steamship companies gradually improving their services, and during the coming season it is expected that sailings from Canadian ports will be fairly regular, although tonnage will undoubtedly be scarce and freight rates remain high.

REPORTS OF CARGO INSPECTORS IN GREAT BRITAIN.

Following are the annual reports of the cargo inspectors employed under the direction of this division at London, Liverpool, Glasgow, and Bristol. These reports contain first-hand information respecting the condition of Canadian food products when landed in Great Britain, and information of value to Canadian shippers.

REPORT OF THE LONDON CARGO INSPECTOR.

LONDON, March 31, 1915.

At nearly all the docks under the port of London authority, there have been improvements or extensions, of more or less importance, made during the last year, but at the Surrey Commercial and the Millwall docks, where most of the Canadian imports are discharged, there have been considerable improvements made, and increased accommodation is now in process of erection. At the latter dock the authority has decided to increase the storage capacity by the conversion of some disused covered sidings into a shed suitable for the storage of goods. The area covered will be 115,000 square feet. The dry dock, which was 445 feet long, has been lengthened to 555 feet.

At the Surrey Commercial docks the authority is providing at the Brunswick yard a shed 385 long by 99 feet wide for the Canadian Pacific Railway; a shed covering about 32,000 square feet for the Cunard Company, and two sheds with a combined area of 15,000 square feet for the authority's import and export business.

Cheese.—The cheese received during the year from Canada amounted to 800,000 boxes, this being an increase of about 41,000 on the previous twelve months' total. There have been very few shipments in which the cheese has arrived in heated condition, and generally speaking the stowage has been good. During the time of the landing of the Canadian Expeditionary Force there were shipments in which the cheese became very badly heated consequent upon the long period during which the boxes remained in the holds before discharge.

Taking the season through, there has been an improvement in the condition of the cheese boxes on arrival, and the percentage of broken boxes has been rather lower than during recent years. The proportion of sound boxes and well-boxed cheese still leaves room for very great improvement, but it is well to note that complaints in this respect have been less frequent during the last year. There are certain marks which invariably reach the storage sheds here in first-class condition as to boxes, proving that if the boxes are fitted to the cheese and leave the factory in sound condition, there is nothing to prevent them reaching the consignees in almost as good shape as they leave the senders. There have been no alterations in the usual methods of discharging cheese, the elevator

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conveyor which was tried here two seasons ago not having been used this year. There has been great congestion at the docks since November, 1914, but on those steamers carrying cheese, which had cold and cool air chambers, the machinery was invariably kept going while the boat was awaiting a berth, and when the cheese was ultimately landed it was found to be in good condition.

Bacon.—During the latter half of the year bacon has come to hand in greatly increased quantities, and there have been some very fine consignments during recent months. Considering the weight of these cases they have been very well handled, with the minimum of breakage, and at all times repairs are made good in the sheds by competent workmen.

Eggs.—From the end of September to early December large shipments of eggs were received, and these were landed in good condition, the handy size of the case helping to reduce materially the number of broken boxes. The consignees of eggs were few in number, but they expressed themselves as well pleased with the deliveries received and seemed to regard the trade with favour.

Apples.—The results of the apple season now closing have again proved the difficulty of forecasting market movements with any certainty, the most experienced men in the fruit trade having been unable to correctly anticipate the movements which actually took place. Reports to hand in August last indicated very heavy crops of apples in Ontario, Nova Scotia, and the United States, with more than an average crop in England, and the general appearance of things pointed to a glut of apples, with consequent low prices. As a matter of fact, very few Ontario apples reached the London market, but the Nova Scotia arrived here in very good condition and, except for the second and third shipments, there have been no cases in which good prices have not been made. For many years Nova Scotia Gravensteins have not come to hand as clean and sound as this season, while the packing and grading were well done. Consequently, this variety was well received and favourably commented on. The poor prices made here by the early shipments gave no encouragement to shippers in Nova Scotia and, as a result of very small consignments being sent, the market became clear and following deliveries were eagerly sought after at greatly advanced prices. At no subsequent time during the season has there been a real slump in prices, and despite all indications good returns have been well maintained. It is somewhat difficult to understand why shippers should have failed to send Baldwins until late in the season, many large parcels of this variety arriving during February and even March were in wasty condition, and had to be disposed of at a few shillings per barrel. If sent earlier in the season these would have produced a very good return. With all soft varieties, senders would be well advised to err on the side of early shipment rather than late.

Despite the large crop, English apples this season had no great keeping qualities, and since the turn of the year the competition from these has not been very much felt. A feature of the trade has been the small difference in the price of No. 1's and No. 2's from Nova Scotia, about one shilling only having frequently been between them. In "Kings" the smaller apples in many cases made the better price as the No. 1's of this variety were frequently very large.

Owing to transport difficulties, there has not been the usual service of steamers between Halifax and London for the apple trade, and in some cases the boats have not been the best adapted for the purpose, but generally this fruit has been well stowed in the holds, and all possible care taken in unloading.

In addition to the usual routine of work, I have sent, during the summer of 1914, regular cables touching on the prospects of fruit crops here and weather conditions, supplementing these by letters on general market matters.

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From September onwards, cables of prices of apples relating to each shipment have been despatched in addition to a periodical resumé of the conditions at London fruit markets. I have also been in communication with prospective buyers of Canadian apples, and sellers of Canadian eggs, and in every case have put the inquirers in the way of getting their requirements met.

Dock Congestion.—The congestion at the docks has been very great since November last, but the Canadian services to the Surrey Commercial docks have not suffered to anything like the extent that shippers to the larger docks have done. Taking everything into consideration consignments of cheese, bacon, and apples arriving at this dock have been subjected to less delay than the average run of produce coming to London by sea.

During the year I have again found the officials of the Port of London Authority ready to extend all possible help, and at the offices and docks of the various shipping companies I have received assistance and consideration at all times.

A. E. GRIFFITH.

REPORT OF THE LIVERPOOL CARGO INSPECTOR.

LIVERPOOL, March 31, 1915.

I beg to submit the following report covering the ports of Liverpool and Manchester.

During the year I have sent reports on cargoes of 307 steamers, forty of which were at Manchester. Owing to the circumstances forced upon us by the war, and the consequent interruption of traffic, more cargoes of some commodities have probably come to these ports than would have come in normal times. On the other hand, shipments of other kinds might have been larger had space on the steamers been available. The New York route has been extensively used, but not always with good results, particularly in the case of fruit. I do not therefore propose to use the figures given in comparison with other years.

Apples.—The receipts of apples from Canada this season were 399,752 barrels and half-barrels and 26,605 boxes. Of this quantity, Nova Scotia supplied 242,855 barrels and half-barrels and 10,513 boxes. The total quantity of apples received at Liverpool from both Canada and the United States was 908,658 barrels and 379,156 boxes.

In the early part of the season, apples came through from Canada in considerable quantities via New York, but as they experienced very warm climatic conditions in transit, and were generally of the soft varieties, they arrived here very much out of condition, and consequently low prices resulted. In some cases, however, better results might have been obtained had a little more care been exercised. For instance, one of the fruit associations sent a parcel here by this route, a considerable portion of which were Greenings. They formed a fair line in the catalogue, but they were stamped with various packers' numbers, all being branded with the name of the association. Some of these numbers opened well packed and in good condition, others exactly the reverse, while some were moderate. All were sold, however, as one lot, depending for the price on the out-turn of the samples which in some cases showed two poor ones, and in others one good and one poor. If they had been properly separated, the better ones would have brought very good prices, and the poorer ones almost certainly the same as already realized.

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The greater part of the season has been anything but brilliant in Ontario varieties, but Nova Scotians generally have been good, though too much small fruit has been packed among No. 1's. The shipments of both sections for the last few weeks have been mostly out of condition, chiefly owing to bronzed and spent apples, but also owing to waste, which was to be regretted, as most of the Maine variety have during the same period landed "bronzed and wasty."

As to boxed apples, packers need to keep on improving their style of packing, making them neat and fancy, so as to catch the eye, if they are to compete with the Oregon and Washington varieties. Many Canadian boxes were received here this year with only one (the top) layer papered, and others not papered at all, making them look very common on that account.

There has been no further improvement in the packing of western New York or Virginia apples, but they have kept up to their usual standard, and except in the case of "bronzed parcels" are realizing good prices.

In the matter of investigations of the Liverpool Port Sanitary Authority *re* "San José scale," that authority has not taken any action this season, probably on account of the war with Germany, the country most interested.

Although Mediterranean fruit has in many cases been seriously delayed in landing, owing to congestion at the docks, and in several cases also apples from the United States, in only one case, viz.: the SS. *Georgic*, was there any delay of more than a day in landing apples from Canada.

Pears.—We received during the year, 17 barrels, 37 half-barrels and 4,780 boxes and half-boxes of pears from Canada. Some of the shipments arrived out of condition, having been sent by ordinary stowage on the steamers. In my last report I pointed out that ordinary stowage was the cause of the faulty condition of several of the parcels arriving here last season. The prices realized this season were: Duchess, 3s. 9d., 4s. 3d.; Anjou, 5s. 6d., 6s.; Clairgeau, 4s. 4½d. for sound boxes No. 1's; Duchess, 3s. 6d., 4s. for sound boxes No. 2's.

Peaches.—We have had no peaches from Canada this year. Plums, peaches, grapes, pears, etc., continue to arrive here in splendid condition from Cape Colony, South Africa, and realize good prices.

Cheese.—We have received here from Canada this year 416,758 boxes of cheese, 479 cases, each containing two or three small cheese, and 369 cases of cream cheese in pots. We also had a shipment of 18 kegs and 593 boxes (butter boxes) of skim cheese in crumbs.* The handling of cheese here this season has left much to be desired. One of the causes of this is that strangers have taken the places of many of the regular hands who have gone to the front, and another cause is due to the package itself, and I repeat what I said in my last report in favour of the New Zealand crate. Almost all the merchants and their men here have now become familiar with the crate, and what little difficulties there were in the way of ready opening have been overcome. This package is very favourable also for the easy detection of bad condition or any damage which has been caused in transit. A feature of this year has been the large number of boxes of cheese sent here during the last few months from the United States.

Bacon.—We have had 81,832 cases of bacon and hams from Canada this year, which almost invariably arrived in good condition. At times the handling has been rough owing to the employment of inexperienced men, but the packages are not strong enough for the weight they contain. They require more inside stiffening and, in many cases, tighter packing. Considerable numbers of large cases have arrived here containing several pieces of perished timber, and these invariably give way when the sling is tightened on them, causing breakage.

*The writer probably refers to dried casein. J. A. R.

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Butter.—There have been landed here this year, 2,595 boxes and tubs of butter and 56 barrels of butter from Canada. They have in all cases arrived in good condition. A considerable quantity of butter and renovated butter has also arrived here from the United States during the last few months.

Eggs.—I estimate the quantity of eggs landed here from Canada this year at 46,148 cases. More than half of these were not branded "Canadian produce," and it is quite possible that many more may have been Canadian, but as they were not so branded there was no means of discovering their origin. Considerable quantities have also come here in the same steamers as the above, and also via New York from the United States, most of which were branded "U. S. A. produce," the remainder not being distinguished are not counted.

I consider it would be to the advantage of Canadian shippers to brand their shipments as Canadian produce. I am given to understand by buyers from consignees on this side that there is a distinct trade here in Canadian eggs, apart from any other, and that when they have bought Canadian eggs and have been supplied with cases not described as such, they have been very dubious and disappointed, and in several cases have returned them to the importer. One instance of this kind was brought to my notice.

Cases with the stiff sides carry much the best, those with the thin wood sides often opening out when sliding in line down the shute, a method which is by far the best with ordinary care.

Canned apples.—A total of 59,451 cases of canned apples were landed here, about half of them in cardboard boxes, which being kept dry, have stood fairly well.

Other Produce.—There have also been landed here: 185 tierces and 3,585 cases lard; 2,268 frozen hogs; 5,191 cases and sacks of beef loins, chucks, kidneys, tripe, udders, etc.; 226 quarters beef, 3,883 cases frozen poultry; 3,616 cases frozen salmon and halibut; 200 cases frozen fish, various kinds; 137 barrels of tongues, feet, etc.; 1,860 cases turkeys; 24,623 cases of canned meat, chickens, and tongues; 4,714 cases of evaporated apples; 1,681 barrels of dried apples and apple skins; 375 cases canned corn; 5,001 cases canned pears; 12,300 cases canned tomatoes; 1,000 cases canned peas; 75 cases canned beans; 25 cases canned vegetables, besides small consignments of hog casings, hog hair, meat extract, etc.

Increased Cold Storage Facilities.—The cold storage facilities at these ports have been increased during the year.

Dock Congestion.—A word as to the congestion at the docks. In connection with this question, which seems a remarkable one considering the extent of the docks (7 miles long at Liverpool) and the enormous quay space, it must be remembered that of late years motor transport has played a conspicuous part in clearing the quays, by removing quickly large quantities of cargo to the warehouses, to coasting steamers, and also to the manufacturing towns of Lancashire. Great numbers of these motors have been requisitioned by the Government for war service, both at home and abroad, and this, in addition to a great part of the railway service being also required, has led to the shortage of conveyances, and thus in no small measure to the congestion.

As before stated. Canadian produce has not suffered very much as to landing owing to the congestion, but in the case of bacon has been somewhat delayed in delivery.

I have again to thank the officials of the various steamship companies for the assistance given and the courtesies extended during the year.

PHILIP J. GABLER.

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REPORT OF THE GLASGOW CARGO INSPECTOR.

GLASGOW, March 31, 1915.

I have much pleasure in submitting my report for the year ending March 31, 1915.

I am unable to procure comparative figures with previous years, but the duties have been carried out on the same lines as before, viz., attending docks on the arrival of steamers, watching the breaking and discharging of cargo (particularly the opening of refrigerator chambers), examining cargo at dock and in stores, attending sales, and sending priced catalogues with reports on each steamer.

I am again sending you a number of letters I have received from some of the principal importers, setting out their views, and which cover most of the points of interest, and which convey useful information.

Cheese.—The year just closed has been exceptional in every way on account of the altered circumstances brought about by the great war, but all Canadian cheese which came to this market found a ready sale at very remunerative prices. The arrivals were uniformly good in quality and quite up to the usual standard, and I have no complaints except in regard to the number of broken boxes, which is still a very large percentage and does certainly detract from the appearance of the cheese on this market. There is no improvement to note in this respect since last year.

Butter.—There have been no arrivals of butter during the season at this port.

Bacon.—Arrivals were still showing a shrinkage in the earlier part of the year, but later receipts showed a considerable increase in quantity, although not too much for this market. The only suggestion made by a large importer here is that the Government should encourage hog raising more than they have ever done before. The condition and quality has been all that could be desired in all arrivals at this port.

Eggs.—Owing to the war, the import of eggs had a revival in our market this year, with very good results, the prices obtained being all over very satisfactory, and the quality and condition of "genuine" Canadian eggs very good. Unfortunately, a large number of States eggs which came forward at the same time were put in competition as Canadian eggs and in some cases injured the good reputation of Canadian eggs with the purchaser. This could be obviated to a great extent by the packers stamping their boxes in plain letters "Canadian produce" and also "box free" as cases of boxes being bought back by some of the smaller merchants and repacked with inferior eggs have been mentioned freely to me. The "box free" stamp will largely put a stop to this.

Apples.—The season just finished has been remarkable in many ways; in fact, the most exceptional season yet experienced. The European war breaking out just at the start gave one the impression that very few if any apples would be required for this side; however, after the markets here got settled down, business generally went along smoothly, and by the middle of September the position was entirely altered, prospects ahead, as I wrote you, for fine first-grade fruit were excellent; in fact, right through the season *good* apples have commanded high prices, especially Baldwins, Greenings, and Golden Russets.

Transport facilities have been rather limited and uncertain, but this fact no doubt contributed in no small measure to a steadying influence on the market.

Canadian fruit generally was very good, with the few exceptions being noted for infringement of Fruit Marks Act. Nearing the end of the season apples affected by frost arriving here had to be realized as quickly as possible, sometimes at very low prices.

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Boxed Apples.—I reported last year that improvement in packing would stimulate the demand, and this has been fully borne out this season, for as late as at time of writing, splendid prices are being realized for Washington Winesaps (from 8s. to 9s. per case, according to counts).

Californian Newtowns have been of late, and are at present, arriving in very bad condition, selling in quantities from 6d. to 5s. per case. In some cases large quantities are valueless, overheating having caused the damage.

Nova Scotian Apples.—Nova Scotian apples had a very short season in our market, principally owing to lack of steamers, but generally speaking the fruit was very good. There have not been so many complaints regarding the practice of grading No. 3 quality No. 2. Quite a quantity of No. 3's were sold here, but they appeared to be the discarded No. 1.

I take this opportunity of again expressing my thanks to all the officials of the various lines of steamers for their assistance freely given to me in my work here, and also to the merchants and importers for their unfailing courtesy on all occasions.

JOHN M. MANSON.

REPORT OF THE BRISTOL CARGO INSPECTOR.

BRISTOL, March 31, 1915.

Owing to the war the past year must be looked upon as being one full of events and altering in various ways the conditions of the provision trade in Bristol in common with other ports. Taking from April 1 of last year up to the end of July, the rather dull conditions of the previous year continued on a high basis of values, with moderately sufficient supplies to meet current demands; but the sudden outbreak of war in the beginning of August changed everything and caused a perfect rush on the part of the public to buy up extra quantities of provisions, thus forcing a rapid advance of prices in every direction. Fortunately this was not long lived, and by the middle of September matters had settled down considerably and more moderate prices ruled. During the winter months our large and growing supplies from Russia in bacon, butter, and eggs were cut off, and greater demands from Germany did not permit of a compensating increase from other continental countries, so stocks are much smaller all round at the present time than in any previous year. At the outbreak of the war the Department of Agriculture instituted a weekly census of all stocks of provisions throughout the country; this action was well backed up by the merchants in making careful returns to the inquiries made by the board, which enabled the latter to publish re-assuring and reliable statistics of the food supply of the country. These returns are now issued monthly, and are no doubt a benefit to the trade.

Cheese.—Our imports from Canada for the past year total a little over 234,000 boxes. At the start of the war the prices ran up very high, but subsided again to nearly their previous level about the middle of September, since which time they have slowly risen to the present price of about 93s., and there does not seem much prospect of it getting lower. The condition of the cheese on arrival has been very satisfactory throughout and, according to the reports of various merchants, well up to the standard of Canadian make. There is still no improvement in the boxes.

Stocks of New Zealand cheese are coming along just now slowly, and I understand there is a good improvement in the flavour and make as compared with previous years.

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Butter.—Two consignments amounting to over 6,000 boxes arrived here during August under cold storage, and were landed in excellent condition. Like other commodities, stocks are far from abundant, and prices ruling high, the difference between now and August last being as much as nearly 30s. per cwt.

Meats.—Our imports of this show an increase over last year, we having received about 2,000 cases. There is a very big demand for bacon, and supplies from the United States are well kept up, but continental ports show a falling off. German merchants, by all accounts, are buying in much larger quantities, and this, coupled with the risk in transit, all tends to curtail our supplies in this line. The Canadian meat arrived here in good condition, and is frequently commented on as being of excellent quality. The cases are good, but owing to their large size I would again suggest an extra band around the centre for strengthening purposes.

Eggs.—For the first time for some years we received some shipments of eggs, amounting to 4,000 cases. There was a shortage of supplies from the Continent, and also a limited supply of Irish eggs towards the latter part of last year, which brought about a practically prohibitive price and caused merchants to import from Canada. All the cases landed in good order, the eggs being well and carefully packed.

Apples.—In all, we have received nearly 11,000 barrels and 200 boxes, one shipment only being from Nova Scotia. With the exception of one small parcel the bulk were sent through to Cardiff and some to Birmingham. From personal observation at the docks, and also from reports to hand, the various shipments have come along in very good condition, though most of the Golden Russets have been somewhat poor in colour. The supply of Canadian apples to South Wales via this port shows a big falling-off as compared with previous years, the chief source this year having been through Liverpool. In the early part of January very good prices were obtainable for nearly all varieties. Apples in boxes were especially good, being carefully papered and packed, and if this plan of packing for No. 1 grade especially was more universal, there would be a greater demand at better prices.

Pears.—We also received 217 barrels of pears and 37 boxes, which were landed in good condition. Great care had evidently been taken in packing a consignment that came in cold storage per SS. *Georgic*, the barrels having ventilating holes and the pears not too tightly packed. Boxes, however, are much preferable to barrels for pears owing to the fruit getting bruised so readily, with a following tendency to get bad quickly, thereby spoiling what would otherwise be a good sale.

Thermographs.—A number of these were placed on board the various ships and all showed good working results.

Steamship Services.—Just as the Montreal service was in full swing, everything was thrown out of gear and the services to this port thoroughly disorganized owing to the authorities taking over nearly all the ships for Government purposes, so our arrivals of Canadian produce have been at irregular intervals, the number of ships coming to hand being just one-half of any previous year. This, of course, has tended to considerably reduce our imports, which has not been counteracted in the way of increased quantities by the ships that have come to hand.

Since the war started the docks at Avonmouth have become a very important centre both for the military and naval authorities, who commandeered one side of the dock for their use, the other sides being used for general trade, but owing

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to the Government monopolizing so much of the railway traffic there is great difficulty in getting the goods away from the dock, which is always in a more or less congested state; but with so many difficulties to contend with, and the multifarious items and details arising out of this huge war, it is marvelous the way the work is being carried on and I think we should be thankful it is no worse.

HORACE E. SHALLIS.

FARM PRICES.

Statement showing prices received by farmers for their principal products during each month beginning with April, 1914, and ending with March, 1915.

BEEF CATTLE.

	April, 1914	May, 1914	June, 1914	July, 1914	Aug., 1914	Sept., 1914	Oct., 1914	Nov. 1914	Dec., 1914	Jan., 1915	Feb., 1915	Mar., 1915
Live, per 100 lb.	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island—												
Kensington.....	7.50	7.75	8.00	7.00	7.00	7.50	7.00	6.75		7.00	7.00	.....
Charlottetown.....		6.50	7.00	7.00	6.00	6.00	5.50	5.50	5.50	5.50	5.50	5.50
Quebec—												
Shawville.....	7.25	7.25	7.25	5.75	5.50	5.50	5.50	4.50	4.50	4.75	5.50	5.50
Way's Mills.....	7.50	7.25	7.50	6.75	6.00	6.25	7.00	7.00	7.00	6.50	7.50	8.50
Ontario—												
Cornwall.....	7.50	7.50	7.50	7.75	8.25	9.00	7.50	4.50	6.75	7.50	7.50	7.50
Ingersoll.....	7.50	7.75	7.25	7.00	8.50	8.50	7.50	7.00	6.75	5.50	6.75	6.50
Lang.....	7.00	7.25	5.00	7.50	7.00	7.00	8.00	7.00	7.00	6.00	5.75	6.25
Listowel.....	7.50	7.50	8.00	8.00	7.75	8.75	8.00	8.25	7.50	7.50	7.50	7.00
Mallorytown.....	4.75	6.75	6.00	6.00	6.50	6.00	6.00	5.50	5.75	5.50	6.50	5.50
North Gower.....	7.75	7.75	8.50		7.75	8.25	7.75	7.50	7.75	8.00	6.75	6.00
Renfrew.....	7.50		7.00	6.50	5.75	7.50	6.50	4.75	3.50	4.25	.....	.....
Sunderland.....	8.50	8.50	8.00	7.75	8.40	8.50	6.50	8.25	8.00	7.00	7.50	6.25
Dressed, per 100 lbs.												
Nova Scotia—												
Brookfield.....					9.50	11.00	8.00	7.50	7.00	9.00	8.50	8.50
Meteghan River....		11.00	11.00	11.00	11.00	12.00	12.00	10.00	10.00	12.00	.....	11.00
Scotsburn.....	11.00	12.00	12.00	12.00	13.00	9.00	8.00	8.00	8.50	.....	8.00	9.00
New Brunswick—												
St. Joseph.....		11.00	11.00	11.00	10.25	10.25	10.00	10.00	9.00	.....	8.75	8.75
Quebec—												
Montmagny.....		11.50	14.00	13.50	15.00	12.00	10.00	10.00	8.50	9.00	11.00	.....
Ste. Anne de Chi-												
coutimi.....	12.00	12.00	12.00	12.00	11.00	11.00	7.00	5.00	6.00	6.00	8.50	11.50
St. Hyacinthe.....		13.00	13.00	13.00	12.50	12.50	12.50	12.00	11.00	10.00	9.50	11.50
St. Jerome.....	9.50	9.50	9.00	9.00	10.00	11.00	8.00	5.00	7.00	8.00	12.00
St. Raphael.....			13.00	15.00	15.00	14.00	14.50	14.50	15.00	12.00	14.00

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VEAL CALVES.

	April, 1914	May, 1914	June, 1914	July, 1914	Aug., 1914	Sept., 1914	Oct., 1914	Nov., 1914	Dec., 1914	Jan., 1915	Feb., 1915	Mar., 1915
Live, per 100 lb.	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Quebec--												
Shawville.....	4.50	4.50	4.50	5.50	5.00	5.00	5.00	4.50	4.75	....		4.75
Ontario--												
Avonmore.....			6.00	8.00	9.00	9.00	8.00	8.00	8.00	8.00	8.00	7.00
Hallville.....		9.00	7.00	8.00	8.00	8.00	9.00	8.00	8.00	8.00	8.00	8.00
Ingersoll.....	9.00	8.00	9.25	9.25	9.75	9.50	10.25	8.75	8.50	8.50	7.75	8.50
Listowel.....	9.00	8.00	7.50	8.00	9.50	10.00	10.00	9.00		8.00	9.00	8.50
Mallorytown.....	7.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	7.50	6.00	6.50	7.00
Live, per head.												
Nova Scotia--												
Meteghan River..		6.00	6.00	6.00	8.00	8.00	8.00	7.00	7.00	7.00		7.00
New Brunswick--												
St. Joseph.....		8.00	9.00	9.00	8.50	8.50	8.50	8.50				
Quebec--												
Ste. Anne de Chi-												
contimi.....	5.00	5.00					5.00	5.00	5.00		3.00	3.00
St. Aubert.....		5.00	6.00	4.00	7.00	8.00		8.00	7.00	7.00	7.00	
St. Jerome.....	3.50	3.00			5.00	5.00	6.00	5.00				2.50
St. Prosper.....		4.00	5.00	4.00	4.50	5.00	5.00					
Ontario												
Alexandria.....	4.00	3.00	6.00	6.50	5.00	5.00	5.00	5.00	5.00		6.00	6.00
Lang.....	7.00	7.00	6.00	6.50	8.00	7.00	8.00	8.00	7.50	7.00		

SHEEP.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept., 1914.	Oct., 1914.	Nov. 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
<i>Live, per 100 lbs.</i>	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island— Kensington	5 50	5 50	5 50	...	5 00	5 00	5 00	5 00	5 00	4 75	5 00	5 50
New Brunswick— St. John		6 00		...	10 00	9 50	9 50	9 25	9 25			...
Quebec— Shawville	5 00	5 00	4 50	4 00	4 00	4 00	4 50	4 00	4 25	4 25	4 50	6 00
Ontario— Gunnville	7 00	7 00	7 00	5 00	5 75	5 50	4 75	5 00	5 50	5 50	7 50	7 00
Lang	4 75	4 75	6 00	7 50	6 50	5 00	6 00	6 00	6 50	7 50	6 50	6 00
Malloryville	4 50	5 00	5 50	5 50	5 50	6 00	5 00	5 50	5 50	8 00	5 50	6 00
Oxford Mills	5 50	5 00	5 00	5 50	5 00	4 50	4 00	4 00	4 00	4 25	5 25	5 00
Renton	5 00		5 00	3 50	4 00	3 75	3 50	3 50	4 00			
Sunderland	5 00	6 00	6 50	5 00	6 25	6 50	5 50	6 50	6 75	4 50	5 00	5 50
<i>Dressed, per 100 lb.</i>												
Quebec— Ste. Anne de Chicoutimi				13 00	12 50		8 00	7 50	6 00	7 00	9 50	12 00
St. Aubert		11 00	12 00	11 00	9 00	11 00		11 00	10 00	10 00	8 00	8 00
St. Hyacinthe		11 00	11 00	11 00	11 00	12 00	12 00	12 00	11 00	11 00	11 00	13 00
St. Jerome	10 00	10 00	10 00	9 75	12 00	11 00	10 00	10 00	10 00	9 00	8 50	
St. Raphael			12 00	12 00	13 00	13 00	10 00	13 00	10 50	12 00	11 00	12 00
Ontario— Fredericton	6 00			7 00	5 50	10 00	10 00	9 00				12 00

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LAMBS.

	April, 1914.	May, 1914	June, 1914.	July, 1914.	Aug., 1914.	Sept. 1914.	Oct., 1914	Nov. 1914	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
<i>Live, per 100 lb.</i>	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island Kensington.....			5 50	5 50	6 00	7 00	6 75	5 75	6 25	6 00		
Quebec— Shawville.....				6 25	8 25	5 25	6 50	6 75	6 25	6 50	7 00	
Ontario— Conwell.....				8 00	8 00	7 00	7 25	7 00	7 25	7 50	11 00	11 00
Hollydale.....					5 00	6 50	6 50	6 75	6 75	7 00	7 00	7 00
Listowel.....	5 00	5 00	8 50	7 00		9 00	7 50	7 00		8 00	8 50	
Mallorytown.....	5 00	6 00	7 00	7 00	7 00	7 00	7 00	7 00	7 00			
<i>Live, per head.</i>												
Prince Edward Island— Chapaud.....		4 00	4 50	4 50	6 50	6 00	5 50	5 75	6 00	6 00		
Crapaud.....		4 00	4 00	4 50	4 50	5 00	5 25	5 25	6 00			
Quebec— Ste. Anne de Chicou- timi.....			3 00	3 25	5 50	3 00	4 00	3 50	4 00			
St. Aubert.....		4 00	5 00	5 00	5 00	4 50		4 00	4 50	4 50	4 00	4 00
St. Jerome.....			3 00	3 00	3 50	5 00	4 50	5 50	5 00	4 00		
St. Prosper.....		5 00		4 00	4 50	5 00	5 00					
St. Raphael.....			5 50	6 00	6 00	5 00	4 25	4 75	4 25	5 00	5 25	5 00
Ontario— Alexandria.....	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00	5 00		5 50	5 00
Ingersoll.....	7 45	6 75	7 00	7 75	7 25	7 50	7 75	6 50	6 75	6 00	6 75	8 25
Lang.....	7 50	7 00	6 00	4 50	7 00	7 00	6 00	7 00	6 75	6 00	6 50	6 00
Rivers.....	5 00		4 00	5 00	7 00	6 50	6 25	6 50	6 50			

HORSES (3 years old and over), per Head.

	April,	May,	June,	July,	Aug.,	Sept.	Oct.,	Nov.,	Dec.,	Jan.,	Feb.,	Mar.,
	1914.	1914	1914.	1914	1914.	1914.	1914	1914.	1914	1915.	1915.	1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island—												
Charlottetown.....	200	200	200	200	200	200	200	200	200	200	200	.....
Crapaud	175	160	180	180	180	200	200	200	200	.....	.....	.....
Kensington.....	180	180	185	200	190	185	175	175	175	175	175	160
Nova Scotia—												
Brockfield.....	225	225	225	225	225	250	250	250	250	.....	.....	.....
Loch Katrine.....	.....	.....	.....	175	175	175	150	150	175	175	175	175
Meteghan River....	200	200	225	175	175	150	.....	200	175	225	.....	250
Scot Burn	185	175	185	185	175	160	160	160	160	160	165	165
New Brunswick—												
St. Joseph.....	.....	200	200	200	210	220	220	220	215	.....	200	190
Sussex.....	.....	225	200	200	200	200	200	175	150	175	150	150
Quebec—												
Montmagny.....	.....	250	250	250	225	225	222	235	225	225	200	.....
Ste. Anne de Chicou-												
timi.....	250	250	250	250	250	260	300	225	225	225	250	225
Ste. Claire.....	.....	175	175	175	175	175	175	175	175	175	175	200
St. Hyacinthe.....	.....	175	160	175	160	180	180	170	160	150	150	150
St. Jerome.....	250	250	225	225	250	225	250	250	250	250	225	225
St. Prosper.....	200	200	200	175	175	175	175	.....	.....	170	170	175
Shawville.....	225	200	175	190	190	185	190	175	155	155	155	215
Way's Mills.....	160	160	160	160	160	160	175	175	185	160	175	185
Ontario—												
Alexandria	130	130	125	125	125	125	125	125	125	.....	125	130
Cornwall.....	150	150	150	110	150	140	135	100	130	140	135	110
Hallville.....	.....	130	145	135	145	160	140	120	125	150	125	125
Ingersoll.....	210	175	185	175	215	210	195	205	190	200	205	215
Lang.....	140	140	150	150	165	135	145	105	150	155	150	150
Listowel.....	185	200	185	185	185	200	180	185	185	170	185	165
Mallorytown.....	165	175	175	175	175	150	160	150	150	150	150	150
Renfrew.....	170	150	150	175	175	175	160	170	165	185

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MILCH COWS (Grade A), per Head.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept. 1914.	Oct., 1914.	Nov., 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island— Charlottetown.....	50	55	55	55	55	55	50	50	50	50	55	.....
Nova Scotia— Brookfield.....	60	60	60	60	55	55	45	45	50	.....	.....	.....
Loch Katrine.....	.....	.....	.....	40	50	50	.....	40	40	55	55	60
Meteghan River.....	55	50	60	50	50	50	.....	50	50	50	.....	50
New Brunswick— Sussex.....	.....	70	70	70	70	70	70	45	55	55	55	55
Quebec— Ste. Anne de Chicou- timi.....	55	55	55	50	55	60	40	40	35	45	50	65
Ste. Claire.....	.....	60	75	50	75	75	75	75	75	65	60	60
St. Hyacinthe.....	.....	60	65	60	50	60	60	70	50	60	60	60
St. Jerome.....	70	70	70	65	50	60	50	50	55	60	55	75
St. Prosper.....	60	60	65	45	45	45	40	.....	.....	55	55	60
Shawville.....	70	65	60	60	60	55	55	60	65	65	60	70
Way's Mills.....	60	60	65	60	50	50	50	65	65	70	65	65
Ontario— Alexandria.....	70	75	75	75	60	60	65	60	65	.....	60	60
Frankford.....	.....	65	80	90	75	.....	75	65	.....	.....	.....	75
Ingersoll.....	110	100	95	95	95	90	90	75	60	70	75	75
Listowel.....	65	75	65	70	70	65	75	75	75	150	75	85
Mallorytown.....	75	80	80	75	75	75	75	75	75	80	80	85
North Gower.....	80	85	90	100	100	100	90	75	75	75	80	85
Renfrew.....	75	.....	70	85	75	80	70	75	70	80	70	85
Sunderland.....	100	100	90	90	90	70	90	90	90	65	90	90

NOTE.—Grade A means cows yielding 3,500 pounds and over.

MILCH COWS—(Grade B.)—per Head.

	Apr. 1914.	May 1914.	June 1914.	July 1914.	Aug. 1914.	Sept. 1914.	Oct. 1914.	Nov. 1914.	Dec. 1914.	Jan. 1915.	Feb. 1915.	Mar. 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island— Charlottetown.....	35	40	40	40	40	40	35	35	35	35	35	.....
Nova Scotia— Brookfield.....	40	40	40	40	35	40	35	35	40	.....	.....	.....
Loch Katrine.....				35	35	35	45	30	35	35	40	40
Meteghan River.....	30	35	30	40	40	35		35	35	35	.....	35
New Brunswick— Sussex.....		5	35	35	35	35	35	30	30	30	30	30
Quebec— Ste. Anne de Chicou- timi.....	40	40	40	45	40	50	30	30	30	35	35	55
Ste. Claire.....		40	50	40	50	50	45	40	50	40	40	40
St. Hyacinthe.....		45	45	45	35	45	45	50	35	40	40	40
St. Jerome.....	50	45	45	40	20	50	40	35	35	40	40	55
St. Prosper.....	35	35	35	30	30	35	25			30	30	35
Shawville.....	50	45	40	35	40	40	40	40	40	50	50	50
Way's Mills.....	45	45	45	40	35	35	35	40	40	50	40	50
Ontario— Alexandria.....	50	50	50	50	45	45	45	60	50	.....	50	50
Frankford.....		65	70	75	45	40	30			.....	.....	50
Ingersoll.....	60	60	80	80	90	75	80	65	50	55	65	65
Listow.....	50	60	45	50	50	50	50	50	50	50	50	60
Mallorytown.....	40	60	45	40	40	40	45	45	40	50	55	50
North Gower.....	60	60	65	50	65	60	60	50	50	55	55	50
Renfrew.....				65	50	50	50	50	15	55	50	60
Sunderland.....	85	85	65	60	60	50	60	60	65	50	75	60

NOTE.—Grade B means cows yielding under 3,500 pounds.

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WHEAT—per Bushel.

	Apr. 1914.	May 1914.	June 1914.	July 1914.	Aug. 1914.	Sept. 1914.	Oct. 1914.	Nov. 1914.	Dec. 1914.	Jan. 1915.	Feb. 1915.	Mar. 1915.
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
<i>Winter.</i>												
Prince Edward Island— Kensington.	1 00	1 00	1 00	1 00			1 00					
Quebec— Shawville.	0 80	0 80	0 80	0 85	0 95	0 95	1 00	1 00	1 00	1 00	1 15	1 15
Ontario—												
Avonmore.		1 00	1 00	0 99	0 97	1 17	1 07	1 07	1 10	1 20	1 35	1 50
Frankford.		1 00	1 00	1 00	1 10		1 10	1 12				1 50
Ingersoll.	1 00	1 00	1 00	0 97	1 07	1 07	1 07	1 07	1 09	1 10	1 30	1 53
Lambton.	1 00	1 00	1 03	1 03	0 95	1 15	1 07	1 07	1 06	1 08	1 60	1 30
Lincoln.	0 95						1 20	1 00	1 12	1 10	1 40	1 50
Renfrew.	0 90		0 85	0 93	1 00	1 00	1 05	1 05	1 00	1 07	1 30	1 35
Sunderland.	0 95	0 95	1 00	0 90		1 15	1 10	1 10	1 10	1 15	1 50	1 40
<i>Spring.</i>												
Prince Edward Island— Charlottetown..	0 95	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
Nova Scotia— Meteghan River...	1 75	1 75	1 75	1 50	1 50	1 50		1 25	1 50			1 75
Quebec—												
Ste. Anne de Chicou- timi.	1 50	1 50	1 50	1 20			1 50	1 50	1 60	1 60	2 10	2 25
St. Aubert.		1 50	1 50			1 50	1 50		1 50	1 50		2 00
Ste. Claire.		1 25	1 25				1 25	1 25	1 25	1 50	1 50	
St. Jerome.	1 50	1 50	1 50	1 50	1 60	1 20	1 50	1 50	1 25	1 45	2 10	2 25
Shawville.	0 85	0 85	0 85	0 92	1 05	1 00	1 05	1 15	1 15	1 15	1 30	1 25
Ontario—												
Alexandria.	0 85	0 85	0 95	1 00	1 00	1 00	1 00	1 00	1 00		1 25	1 30
Avonmore.		1 00	1 00	0 99	0 97	1 17	1 07	1 07	1 10	1 20	1 35	1 50
Kingston.	0 90	0 90				0 97	0 97	1 17	1 17	1 17		
Renfrew.	0 93		0 90	0 97	1 00	1 03	0 93	1 05	0 95	1 07	1 30	1 35
Sunderland.	0 90	0 90	1 00	0 90	1 05	1 15	1 10	1 10	1 10	1 15	1 50	1 40

OATS—per Bushel (34 lb.)

	Apr. 1914.	May 1914.	June 1914.	July 1914.	Aug. 1914.	Sept. 1914.	Oct. 1914.	Nov. 1914.	Dec. 1914.	Jan. 1915.	Feb. 1915.	Mar. 1915.
	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Prince Edward Island— Kensington.	36	38	40	40	40	60	52	46	50	50	50	55
Nova Scotia— Brookfield....	50	50	55	60	60	60	65	60	65			
Meteghan River.....		60			70	65		70	70	80		80
Scottdorn	50	50	55	55	60			60			60	70
New Brunswick— St. Joseph.....		61	64	64	62	68	61	57	57		59	66
Sussex.....		45	50	50	65	65	50	55	60	60	70	75
Quebec— Ste. Anne de Chicou- timi.....	50	50	50	54	72	68	60	60	70	70	72	72
St. Aubert.....		53	53		53	68		68	60	60		68
St. Hyacinthe.....		52	47	47	47	57	57	60	52	52	57	68
St. Jerome.....	38	40	43	48	53	68	60	55	60	68	68	72
St. Prosper.....	45	50	50	60	55	50	50			50	65	70
St. Raphael.....			51	51	51	60	60	51	51	60	60	68
Shawville.....	47	52	50	47	47	50	43	44	44	46	55	60
Ontario— Alexandria.....	37	40	45	50	50	50	40	42	50		50	75
Frankford.....		47	50	48	55		50	50				60
Ingersoll.....	35	43	46	47	53	53	47	53	47	45	53	57
Listowel.....	40	40	40	50	42	60	50	45	45	45	55	60
Mallorytown.....	45	45	50	50	55	55	50	50	50	55	60	65
North Gower.....	40	48	45	45	46	60	55	47	55	52	60	70
Renfrew.....	47		47	47	50	55	50	50	47	47	57	57
Sunderland.....	40	45	45	45	50	60	43	50	50	50	60	63

BARLEY—per Bushel.

	Apr. 1914.	May 1914.	June 1914.	July 1914.	Aug. 1914.	Sept. 1914.	Oct. 1914.	Nov. 1914.	Dec. 1914.	Jan. 1915.	Feb. 1915.	Mar. 1915.
	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.
Quebec— Ste. Anne de Chicou- timi.....	0 80	0 80	0 80								1 20	
St. Aubert.....	1 00	1 00	1 00			1 00		1 00	1 00	1 00	1 00	1 00
St. Hyacinthe.....		0 90	0 80	0 85	0 80	0 85	0 90	0 80	0 80	0 58	0 85	0 90
St. Jerome.....					1 10		0 80	0 80	0 60	0 68	1 20	
Shawville.....	0 55	0 60	0 55	0 55	0 55	0 55	0 52	0 60	0 60	0 65	0 75	0 75
Ontario— Alexandria.....	0 58	0 60	0 65	0 65	0 65	0 65	0 60	0 65	0 70		0 75	0 80
Cornwall.....	0 60	0 60	0 60			0 70	0 65	0 65	0 70	0 75	0 80	0 80
Frankford.....		0 58	0 58	0 55	0 60		0 60	9 65				0 80
Lang	0 60	0 55	0 60			0 65	0 70	0 62	0 70	0 80	0 80	0 83
Listowel.....	0 48	0 50	0 52	0 54	0 54	0 55	0 55	0 60	0 60	0 60	0 65	0 65
North Gower.....	0 52	0 58	0 55	0 60	0 60	0 65	0 65	0 65	0 60	0 70	0 75	0 85
Renfrew.....	0 50			0 50	0 60	0 60	0 70	0 60	0 60		0 70	0 70
Sunderland.....	0 60	0 60	0 55	0 50	0 65	0 70	0 65	0 66	0 65	0 60	0 80	0 80

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HAY (Loose—per Ton.)

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept., 1914.	Oct., 1914.	Nov., 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island—												
Crapaud.....	11 00	11 00	11 00	12 00	8 00	9 00	9 00	12 00	12 00			
Kensington.....	14 00	14 00	14 00	14 00	10 00	9 00	11 00	12 00	12 00	12 00	12 00	12 50
Nova Scotia—												
Loch Katrine.....				12 00	12 00	12 00	....	18 00	16 00	16 00	16 00	16 00
Meteghan River.....	12 00	11 00	10 00	10 00	10 00	10 00	....	12 00	12 00	12 00	....	....
New Brunswick—												
St. Joseph.....	....	16 00	16 00	16 00	15 00	10 00	11 00	14 00	14 00		14 00	14 00
St. Joseph.....	....	12 00	13 00	12 00	13 00	13 00	13 00	15 00	14 00	14 00	14 50	15 00
Quebec—												
Ste. Anne de Chicoutimi.....	13 00	14 00	15 00	13 50	17 00	19 50	20 00	15 00			20 00	19 00
St. Hyacinthe.....		10 00	10 50	12 00	12 00	14 00	15 00	14 00	13 00	14 00	15 00	16 00
St. Jerome.....	12 00	12 00	12 00	12 50	13 00	19 50	18 00	14 50	19 00	18 00	20 00	18 50
St. Prosper.....	10 00	12 00	12 00	15 00	15 00	15 00	15 00			12 00	13 00	18 00
St. Raphael.....			10 00	9 00	11 00	10 00	11 50	13 00	12 00	14 00	13 00	15 00
Shawville.....	15 50	15 50	14 50	13 50	13 50	14 00	14 00	15 00	14 50	14 50	15 50	14 50
Way's Mills.....	9 00	10 00	8 50	9 00	10 00	10 00	11 00	12 00	12 00	11 00	14 00	16 50
Ontario—												
Avonmore.....		14 00	13 50	13 50	13 00	13 00	13 00	13 50	16 00	16 00	17 00	16 00
Cornwall.....	12 00	12 00	12 00	16 00	16 00	16 00	17 50	18 00	18 00	17 00	18 00	18 00
Hallville.....		14 00	14 00	13 50	15 00		15 00	14 00			17 00	17 00
Ingersoll.....	13 00	12 50	12 50	11 50	14 00	13 50	12 75	13 00	13 25	13 25	13 25	15 25
Lang.....	19 00	19 00	20 00		17 00	19 00	19 50	20 00	20 00	21 00	24 00	25 00
Listowel.....	16 00	16 00			12 00	12 00	12 00	12 00	12 00	14 00	14 00	15 00
Mallorytown.....	12 00	16 00	17 00	17 00	15 00	15 00	14 00	13 00	14 00	14 00	16 00	15 00

HAY (Baled)—per Ton.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept., 1914.	Oct., 1914.	Nov., 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island—												
Charlottetown.....	18 00	19 00	17 00	15 00	16 00	16 00	16 00	15 00	16 00	15 00	15 00	.....
Kingston.....	15 00	15 00	16 00	16 00				13 00	13 00	13 00	13 00	13 50
Nova Scotia—												
Brookfield.....	14 00	14 00	16 00		18 00	18 00	18 00	15 00	16 00		.....	.....
Morrisburg.....	14 00	13 50	13 00	12 00	12 50	12 25		14 00	15 00	14 50	.....	14 00
New Brunswick—												
St. Joseph.....		19 00	19 00	19 00	17 00	14 00	16 00	16 00		16 00	16 00	16 00
St. Mary.....		12 00	15 00	15 00	15 00	15 00	15 00	18 00	16 00	16 00	16 50	17 00
Quebec—												
Montreal.....		13 00		10 00	12 00	12 00	15 00	14 00	13 00	11 00	14 00	...
Ste. Anne de Chi-												
coutimi.....	15 00	16 00	17 00	16 50	18 75	21 00	24 00	20 00	15 00	21 00	23 00	22 00
St. Charles.....		10 00	14 00	14 00	17 00	15 00	12 00	11 00	15 00	13 00	13 00	.....
St. Hyacinthe.....		12 00	12 50	13 00	15 00	15 00	16 00	16 00	14 00	15 00	16 00	18 00
St. Jerome.....	13 25	13 50	13 50	14 00	15 50	21 00	20 00	15 00	21 00	20 00	23 00	21 00
St. Prosper.....	12 00	14 00	14 00	16 00	16 00	16 00	16 00			13 50	14 50	20 00
Shawville.....	16 00	16 00	15 00	14 00	13 00	16 00	15 50	15 50	15 00	15 00	16 00	15 00
Ontario—												
Alexandria.....	14 00	14 00	14 00	15 00	14 00	14 00	14 00	15 00	15 00		16 00	16 00
Cornwall.....		15 00	15 00	15 00	14 00	14 50	14 50	15 50	17 50	17 50	20 00	20 00
Ingersoll.....	14 00	14 50	14 50	12 50	15 25	14 50	14 50	15 00	14 75	14 50	14 75	17 50
Kingston.....	14 00	15 00	15 00	15 25	16 25	15 50	15 25		14 25	15 00		15 50
Listowel.....	15 00	15 00	16 00	17 00	16 00	14 00			14 00	16 00	17 00	18 00
Mallorytown.....	14 00	16 00	19 00	18 00		17 00	16 00	15 00	15 00	16 00	18 00	17 00
Sunderland.....	16 00	15 00	15 00	16 00	20 00	20 00	19 00	20 00	20 00	20 00	20 00	20 00

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POTATOES—per Bushel.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept., 1914.	Oct., 1914.	Nov., 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island—												
Kensington.....	.30	.32	.45	.45		.60	.29	.22	.25	.25	.30	.30
Nova Scotia—												
Brookfield.....	.50	.50	.60	.80	.80	.80	.50	.50	.50			
Loch Katrine.....				.60	.70	.70		.45	.45	.45	.45	.40
Meteghan River.....	.57	.58	.62		.50	.40			.40	.60		.50
New Brunswick—												
Sussex.....		.50	.50	1 25	1 00	.50	.40	.40	.27	.40	.40	.40
Quebec—												
Ste. Anne de Chi-												
coutini.....	.50	.50	.50	.73	1 12	1 00	.45	.40	.50	.60	.50	.50
St. Aubert.....		.55	.55	.40	.50	.31	.33		.25	.25	.25	.30
St. Hyacinthe.....		.75	.70	.75	.90	.60	.50	.50	.60	.60	.65	.60
St. Jerome.....	.35	.40	.40	.50	.75	.60		.30	.40	.40	.45	.45
St. Prosper.....	.50	.50	.50	.60	.50	.40	.40			.50	.50	.50
Shawville.....	.65	.75	.65	.65	.90	.50	.60	.40	.45	.50	.60	.55
Way's Mills.....	.35	.30	.50	.50	1 00	.65	.50	.50	.55		.50	.45
Ontario—												
Cornwall.....	.50	.50	.50	.65	.65	.60	.40	.50	.50	.50	.35	.35
Ingersoll.....	.80	.85	.85	1 10	.90	.90	.75	.20	.20	.40	.35	.30
Langton.....	.65	.60	1 00	1 30	1 40	.80	.70	.30	.40	.45	.40	.40
Mallorytown.....	.80	.80	.80	1 50	1 50	.60	.50	.40	.40	.40	.40	.40
Oxford Mills.....	.55	.60	.60	.60	.60	.60	.35	.33	.35			
Sunderland.....	.50	.50	.75	.75	.75	.60	.50	.30	.45	.50	.45	.45

MILK—per 100 lb.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug., 1914.	Sept., 1914.	Oct., 1914.	Nov., 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
<i>Delivered at Factory.</i>												
Prince Edward Island—												
Charlottetown.....	1 20	.95	.93	.91	.95½	.98	1 03	1 05	1 08	1 14	1 30	...
Kensington.....	...	...	1 08	1 08	1 08	1 10	1 10	1 10	...	...	1 08	1 09
Quebec—												
Montmagny.....	...	...	.75	.80	.90	.92	1 20	1 25	1 25	1 25	...	...
Ste. Anne de Chi-				1 00	1 12	1 22	1 30	1 35	1 30	...	...	...
contimi.....				1 00	1 02	1 03	1 25	1 32	1 30	...	...	...
Ste. Claire.....		.95	.95	1 00	1 02	1 03	1 25	1 32	1 30	...	...	...
St. Hyacinthe.....		.80	.82	1 00	.98	1 10	1 05	1 20	1 20	1 20	...	...
St. Jerome.....		.82	1 03	1 05	.99	1 27	1 30	1 36	1 21	1 31	1 38	...
St. Prosper.....	1 00	.90	.76	1 00	1 18	1 23	1 25	...	...	1 40	1 40	1 20
Ontario—												
Alexandria.....	...	.90	1 08	1 10	1 15	1 15	1 20	1 40	1 50	...	...	...
Frankford.....	...	1 00	.93	1 00	1 00	...	1 15	1 15	...	...	...	...
Hallville.....	...	.99	.96	...	1 03	1 00	1 16	1 28	1 40	1 50	1 50	1 10
Ingersoll.....	1 05	1 00	1 00	.98	1 06	1 09	1 15	1 12	1 25	1 33	1 37	1 53
Lang.....	1 40	1 30	1 00	1 03	1 00	1 25	1 20	1 25	1 16	1 50	1 50	1 40
Mallorytown.....	1 00	1 00	1 00	1 00	1 00	1 15	1 30	1 45	1 40	1 50	1 45	1 40
<i>Sold Direct.</i>												
New Brunswick—												
Sussex.....	...	1 65	1 65	1 65	1 45	1 45	1 45	1 59	1 59	1 59	1 59	1 59
Quebec—												
St. Hyacinthe.....	...	2 00	1 50	1 50	1 50	1 60	1 60	2 00	2 00	2 00	2 00	2 00
Ontario—												
Alexandria.....	2 00	1 50	1 20	1 20	1 30	1 30	1 35	1 60	1 60	...	1 85	1 85
Cornwall.....	1 85	1 80	1 80	...	...	...	...	2 20	2 15	2 15	2 20	2 20
Ingersoll.....	1 30	1 27	1 10	1 10	1 23	1 30	1 35	1 60	...	1 37	1 60	1 60
Kingston.....	1 20	1 30	1 20	2 80	1 75	1 60	1 75	...	1 85
Lang.....	1 40	1 40	1 40	1 40	1 50	...	1 50	1 58	...	1 40

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CREAM—per Lb. Fat.

	April, 1914	May, 1914	June, 1914	July, 1914	Aug., 1914	Sept., 1914	Oct., 1914	Nov., 1914	Dec., 1914	Jan., 1915	Feb., 1915	Mar., 1915
<i>Delivered at Factory.</i>	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Prince Edward Island— Kensington.....			27	27	26 $\frac{1}{2}$	27	29	29	29	28	27	29 $\frac{1}{2}$
Nova Scotia— Brookfield.....	29	31	27	27	27	27	27	30	30			
Meteghan River.....		28	26	25 $\frac{1}{2}$	25 $\frac{1}{2}$	26		28	30			
Seaburn.....	32	31	27 $\frac{1}{2}$	24 $\frac{3}{4}$	24 $\frac{1}{2}$	25	28 $\frac{1}{2}$		31 $\frac{1}{2}$			
New Brunswick— Sussex.....		30 $\frac{1}{2}$	26 $\frac{1}{2}$	25 $\frac{1}{2}$	25 $\frac{1}{4}$	26 $\frac{1}{2}$	30	30	30	30	33 $\frac{1}{2}$	33 $\frac{1}{2}$
Quebec— St. Aubert.....	30 $\frac{1}{2}$	25	24	24 $\frac{1}{2}$	27			31	33	33	32	32 $\frac{1}{2}$
Ontario— Cornwall.....		30	30	29	28	35	35	36			33	35
Frankford.....	30		21	23	25		30	31				
Lang.....	29	25	24	25	25	28	30	28	29	30	32	30
Listowel.....	29	27	24	24	22	24	27	25	29	30	32	31
Kingston.....	31		25	26		31	33	35	36		37	
Oxford Mills.....	31	28	23			31					35	33
Redrow.....	31		25	23 $\frac{1}{2}$	23	32	27	29 $\frac{1}{2}$	30 $\frac{1}{2}$	29	27 $\frac{1}{2}$	31
<i>Sold Direct.</i>												
Prince Edward Island— Charlottetown.....		24	24	24	24	24	27	27	27	27	27	
Nova Scotia— Brookfield.....	40		40	40	40	40	40	45	45			
Quebec— St. Hyacinthe.....		40	36	36	36	44	44	44	36	36	36	33
Ontario— Alexandria.....	27	24	24	25	25	24	27	28	28		28	30
Cornwall.....	45	35	35	35	35	35	45	38	38	38	45	45
Mallorytown.....	28	25	25	25	27 $\frac{1}{2}$	35	37	38	36	38	38	38

BUTTER—per Pound.

	April, 1914.	May, 1914.	June, 1914.	July, 1914.	Aug. 1914.	Sept. 1914.	Oct., 1914.	Nov. 1914.	Dec., 1914.	Jan., 1915.	Feb., 1915.	Mar., 1915.
	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Prince Edward Island— Charlottetown.....	27	25	24	24	26	27½	28	28½	28½	30	31½	..
Nova Scotia— Bridgewater.....	25	25	20	22	22	22	25	26	28	..	..	..
.....	..	..	..	19	20	22	23	..	27½	27½	27½	25½
.....	..	25	22	20	20	20	..	25	25	25	..	25
New Brunswick— St. Joseph.....	..	24	22	22	20	23	24	26	27	..	28	24
.....	..	25	21	21	21	22	25	26	26	26	26	26
Quebec— Ste. Anne de Chicou- tani.....	27	27	27	28	30	32	25	26	28	28	35	40
.....	..	20	18	20	20	24	..	22	22	22	22	25
St. Hyacinthe.....	..	25	23	25	25	28	27	28	27	30	30	32
St. Jerome.....	22	25	25	25	25	33	26	25	25	28	35	35
St. Raphael.....	..	..	23	22	20	30	28	28	26	25	25	25
Chawville.....	..	25	25	27½	25½	28	27	30	28	29	30	27½
Way's Mills.....	30	25	25	23½	25½	28	27	30	28	29	30	27½
Ontario— Alexandria.....	25	27	26	27	28	28	30	32	30	..	30	35
Frankford.....	..	28	25	25	35	..	33	30	..	..	..	35
Ingersoll.....	31	25½	20	24½	..	29	27	27	28	27½	28½	32
Lang.....	32	25	25	25	24	30	30	30	30	30	32	35
Listowel.....	25	25	21	22	24	25	26	27	25	25	28	30
Mallorytown.....	25	25	25	28	28	30	32	33	30	32	35	33
Oxford Mills.....	25	19	22	20	23	25	30	28	26	25	26	26
Renfrew.....	27½	33	21	22½	21	28	27	26½	25	25	29	27½
Sunderland.....	24½	19½	20	19	23	26	28	28	27	25	28	28

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EGGS—per Dozen.

	April, 1914	May, 1914	June, 1914	July, 1914	Aug. 1914	Sept., 1914	Oct., 1914	Nov., 1914	Dec., 1914	Jan., 1915	Feb., 1915	Mar., 1915
	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Prince Edward Island— Crapanzet.	20	18	18	20	21	22	23	24	30			
Nova Scotia— Brookfield.....	18	20	20	18	22	22	25	26	28			
Moosehead River.	18	14	15	18	25	25		25	30	22		18
Scotsburn.....	17	18	19	20	20	22	24	26	30		30	25
New Brunswick— St. Joseph.....		18	18	18	20	22	24	25	30		35	30
Quebec— Montmagny.....		23	18	20	26	30	30	30	40	40	35	
St. Anne de Chicou- timi.....	30	27	27	25	30	30	30	35	40	40	40	40
St. Chaire.....		20	20	20	23	25	30	30	40	40	35	35
St. Hyacinthe.....		25	22	25	24	25	32	35	40	50	45	30
St. Jerome.....	0	25	20	20	25	25	30	30	40	35	40	35
St. Francis.....	15	20		25	25	25	30			35	28	25
Shawville.....		23	18	20	26	30	30	30	40	40	35	
Way's Mills.....	30	20	20	20	25	30	30	32	45	50	25	17
Ontario— Aurora.....		20	18	19	20	25	25	27	30	35	30	27
Ingersoll.....	20	23	14	21	23	22	25	30	37	39	34	26
Lang.....	18	19	22	22	22	24	30	35	40	45	32	23
Listowel.....	24	23	20	19	18	23	23	27	30	40	35	30
Mallorytown.....	20	20	20	22	23	24	27	45	45	40	28	18
Oxford Mills.....	18	19	22	19	20	22	25	28	30	35	35	25
Renfrew.....	25		18	18	20	25	25	27	20	40	32	23

CHICKENS—(Dressed)—per Lb.

	April,	May,	June,	July,	Aug.,	Sept.,	Oct.,	Nov.,	Dec.,	Jan.,	Feb.,	Mar.,
	1914.	1914.	1914	1914.	1914.	1914.	1914.	1914	1914.	1915	1915	1915.
	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.	c.
Prince Edward Island— Kensington.....	12	12	12	12	12½	13	12	13	13	13	13	13
Nova Scotia— Brookfield.....	18	18	15	15	18	18	20	18	17	.....	.....	.....
Loch Katrine.....	.....	.....	.....	13	15	15	15	13	13½	13½	13½	.....
Meteghan River....	18	.....	.....	14	14	14	.....	15	14	15	.....	15
New Brunswick— Sussex.....	.....	19	16	15	22	22	18	16	15	18	18	18
Quebec— Montmagny.....	.....	20	20	20	20	20	20	18	18	18	15	.....
St. Hyacinthe.....	.....	20	20	20	22	24	22	20	17	17	16	17
St. Raphael.....	.....	.....	.....	20	30	25	18	14	13	12	12	12
Shawville.....	.....	.....	.....	.....	17	16	17	14½	14	15	15	.....
Ontario— Alexandria.....	12	12	12	20	12	12	12	11½	.....	10	.....	12
Cornwall.....	12	.....	17	18	25	18	15	11½	16	16	17	17
Ingersoll.....	15	16½	19½	17½	16½	16½	16	13	10½	12½	15½	15
Lang.....	17	17	20	20	20	20	15	15	16	15	18	20
Mallorytown.....	15	16	16	18	18	16	16	15	14	16	15	16
Sunderland.....	18½	19	22	.....	25	20	16	15	13	14½	17	15

APPLES—Per Bushel.

	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
	1914.	1914.	1914.	1914.	1914.	1914.	1914.	1914.	1914.	1915.	1915.	1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Prince Edward Island— Kensington.....	0 70	0 70	.....	.....	.....	0 60	0 40	0 40	0 40	0 45	0 65	0 70
Nova Scotia— Meteghan River ...	1 00	0 83	0 85	.....	0 75	0 75	.....	.....	.....	0 75	.....	0 75
New Brunswick— Sussex.....	.....	1 00	0 85	0 83	.....	0 75	0 75	.....	.....	0 75	.....	0 75
Quebec— St. Prosper.....	.....	.....	.....	1 25	1 00	1 00	1 00	.....	.....	1 25	1 50	.....
Ontario— Alexandria.....	.....	.....	.....	.....	1 20	1 20	1 00	1 00	1 00	.....	1 25	1 75
Ingersoll.....	.....	.....	.....	0 75	0 55	0 35	0 25	0 30	0 50	0 50	0 50	0 55
Kingston.....	1 50	.....	.....	.....	1 25	1 25	1 00	0 75	0 75	.....	.....	1 35
Lang.....	1 70	1 80	.....	.....	0 75	0 50	0 80	0 70	0 65	1 00	0 90	0 75
North Gower.....	.....	.....	.....	.....	.....	0 50	1 00	0 75	1 25	1 00	1 25	1 50

W. W. MOORE,

Chief, Extension of Markets Division.

OTTAWA, March 31, 1915.

APPENDIX III.

REPORT OF THE CHIEF OF THE DAIRY DIVISION.

FINCH DAIRY STATION.

The following is a statement of the business from January 1 to December 31, 1914.

Total milk received.....	2,356,202 pounds.
Total cheese manufactured.....	131,906 "
Total butter manufactured.....	21,247 "
Total milk shipped.....	60,800 "
Total cream shipped.....	14,407 "
Total paid to patrons.....	\$28,108 74

During January and February the entire output was shipped to Montreal as milk and cream. From March 1 to May 13, part of the cream was shipped to Montreal and part made into butter. From May 14 to November 30, the output was principally cheese, with a small quantity of butter and occasional shipments of milk and cream. During December part of the cream was shipped and part made into butter.

The average price paid the patrons per 100 pounds of milk each month was as follows:—

January.....	\$ 1 72	July.....	\$ 1 07
February.....	1 67	August.....	1 15
March.....	1 19	September.....	1 34
April.....	0 98	October.....	1 44
May.....	1 04	November.....	1 44
June.....	1 04	December.....	1 61
Average for the year, \$1.19 3-10.			

The average per cent of fat in the milk delivered from March 1 to October 31 was 3.45. This is almost .10 per cent higher than for the same period in 1913. As all the milk is now paid for according to the Babcock test, the patrons are taking a keen interest in the question of keeping up or increasing the percentage of fat in the milk.

Milk Supply.

During the summer months, milk was received from fifty-three herds. In addition to these, in the late fall and winter months fifty-one patrons from neighbouring factories sent their milk. The manager, Mr. B. A. Reddick, endeavoured to get accurate figures as to the number of cows in each herd among the regular patrons sending milk six months in the year. This was obtained from thirty-seven herds containing 469 cows. These cows averaged 3,581 pounds of milk, and the average money received was \$41.81 per cow. The best herd (twenty-four cows) averaged 6,285 pounds of milk and \$74.83 per cow.

Shrinkage in Milk Supply.

Careful experiments show that when cows receive an abundant supply of succulent feed during the summer months, they will shrink about 10 per cent per month after they reach their full flow of milk, which is usually in June in

the Finch section. Only twenty-two herds contained the same number of cows in June, July, and August. The total number of cows in these herds was 285. These cows showed a shrinkage of 17·7 per cent in July and a further shrinkage of 25·6 per cent in August, or a total loss in these two months of 42,462 pounds of milk over a 10 per cent shrinkage. It is reasonable to assume that this loss could have been prevented by providing suitable soiling crops for feeding the cows during the above months.

Encouraging features of the work at the Finch Dairy Station are the increase in the quantity of the milk being produced during the winter months, when the prices are high, and the growing interest that is being taken in cow testing. One hundred and fifty-five cows were under test during the year. The use of pure-bred bulls is also increasing.

BROME CREAMERY.

The following is a statement of the business from January 1 to December 31, 1914.

Pounds milk received at Brome creamery.....	994,738
Pounds milk received at Brome Centre skimming station.....	409,750
Pounds milk received at Owen's Corner skimming station.....	496,580
Total pounds milk received.....	1,901,068
Pounds cream received at Brome creamery.....	78,236
Pounds cream received at Brome Centre skimming station.....	10,413
Pounds cream received at Owen's Corner skimming station.....	1,287
Total pounds cream received.....	89,936
Total pounds butter-fat in cream and milk received.....	93,067
Total pounds butter manufactured.....	107,644
Total pounds cream sold.....	18,626
Total fat in cream sold.....	7,514
Total paid patrons at Brome creamery.....	\$ 16,255 06
Total paid patrons at Brome Centre skimming station.....	4,931 99
Total paid patrons at Owen's Corner skimming station.....	4,790 80
	\$ 25,977 85
Average pounds of milk to make 1 pound butter.....	22·5
Average price paid the patrons per 100 pounds of milk.....	\$ 1·11 7-10
Average price paid the patrons per 1 pound fat.....	27 9-10

Milk Supply.

Milk and cream were received from fifty-four herds. It was found difficult, however, to get the number of cows in all the herds; therefore, the following figures are estimated on only forty-four herds, containing 686 cows.

The average butter-fat per cow was 117·2 pounds, and the average money paid the patrons per cow was \$32·77. The highest herd average (seventeen cows) was 173·42 pounds butter-fat, and \$47·54 per cow.

Shrinkage in Milk Supply.

The highest flow of milk in the Brome section was in July. Only thirty-seven herds contained the same number of cows in July and August. The total number of cows in these herds was 473. These cows showed a shrinkage of 35·2 per cent in the month of August, which equalled 1,233 pounds of butter-fat.

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Here again as at Finch we can reasonably assume that this loss could have been prevented by providing suitable soiling crops. Better feeding and a more general use of pure-bred bulls are the outstanding requirements of the district as far as dairying is concerned.

EXPERIMENTAL WORK AT FINCH. PAYING FOR MILK ACCORDING TO ITS CHEESE-PRODUCING VALUE.

To divide the proceeds from the sale of cheese accurately among the patrons of a cheese factory, each patron's milk would have to be made up into cheese separately. This, of course, is not practicable. It is, therefore, necessary to adopt some other method of dividing the money. In the early days of cheesemaking, there was no practical method of testing the milk from different herds to ascertain its cheesemaking value; a hundred pounds of milk from one herd was considered equally as good for making cheese as that from any other, so the method of paying each patron the same price per hundred pounds of milk was adopted. The introduction of the Babcock test, however, gave a simple and practical method of determining the percentage of butter-fat in the milk, and it was found from experiments and regular factory work that when the fat in the milk increased, the yield of cheese increased also. Although it is now over twenty-five years since the Babcock test was introduced, and we have known all that time that one hundred pounds of 4 per cent milk will make more cheese than one hundred pounds of 3 per cent milk, we still find a large majority of the cheese factories in Canada paying the patrons the same price per hundred pounds of milk. No small amount of experimental work bearing on this subject has been carried out at the Agricultural Colleges and Experimental Stations in both the United States and Canada, and it was with a view to emphasize what has already been done rather than with the expectation of throwing new light on the subject that the Dairy Division attempted some further work along this line.

In 1913 the staff of the Dairy Division at the Finch station, after considerable testing of milk with the Hart casein tester, found that it was difficult to get reliable results under ordinary factory conditions. A continuation of the work in 1914 gave the same results. The Walker casein test was tried with better success, and it was used in making the tests for casein in the experiments herein recorded. The cheese were made as carefully as possible in two small vats, and the results can be considered fairly accurate for one season's work. All the cheese were tested for moisture when two weeks old by the Dominion Chemist, Dr. Frank T. Shutt, Experimental Farm, Ottawa.

It is impossible to make cheese from day to day with exactly the same percentage of moisture, and to make an accurate comparison of the quantity of cheese made from milks containing different percentages of fat and casein, all the cheese should contain the same percentage of moisture.

The figures given in the following tables are based on 35 per cent moisture in all the cheese.

TABLE I.—Showing Pounds Cheese per 100 pounds Milk, per Pound Fat, per Pound Casein, and per Pound Fat and Casein with Cheese Equal in Moisture Content (35 per cent).

Date of Making.	Pounds Milk.	Per cent Fat in Milk.	Per cent Casein in Milk.	Pounds Cheese with 35 per cent Moisture.	Pounds Cheese per 100 pounds Milk.	Pounds Cheese per one pound Fat.	Pounds Cheese per one pound Casein.	Pounds Cheese per pound Fat and Casein.
June 24.....	386	3.10	2.10	32.00	8.29	2.67	3.95	1.59
July 16.....	341	3.10	2.30	29.05	8.52	2.79	3.64	1.57
“ 9.....	437	3.15	2.45	38.16	8.73	2.77	3.56	1.56
“ 24.....	445	3.20	2.30	38.42	8.63	2.69	3.75	1.57
“ 1.....	358	3.25	2.00	32.61	9.10	2.80	4.55	1.73
June 5.....	823	3.30	2.40	76.32	9.27	2.81	3.87	1.63
July 17.....	477	3.30	2.40	43.23	9.06	2.74	3.77	1.59
June 19.....	800	3.40	2.60	76.52	9.56	2.81	3.67	1.59
“ 25.....	694	3.40	2.30	63.53	9.15	2.69	3.98	1.60
July 1.....	386	3.40	2.00	36.15	9.36	2.75	4.68	1.73
“ 24.....	365	3.40	2.50	31.71	8.68	2.55	3.47	1.47
“ 10.....	414	3.50	2.45	39.51	9.54	2.72	3.89	1.60
June 11.....	750	3.55	2.45	71.93	9.59	2.70	3.89	1.59
July 17.....	457	3.65	2.40	42.63	9.32	2.55	3.88	1.54
June 11.....	750	3.70	2.40	74.44	9.92	2.68	4.11	1.62
“ 18.....	895	3.80	2.50	82.23	10.21	2.69	4.09	1.62
“ 4.....	817	4.00	2.60	87.83	10.75	2.68	4.14	1.62
July 30.....	400	4.00	2.35	41.98	10.49	2.62	4.46	1.65
Totals and averages.	9,905	3.492	2.395	938.25	9.478	2.712	3.954	1.60

The following points are interesting in Table I:—

(1) The yield of cheese from 100 pounds of milk varies from 8.29 pounds to 10.75 pounds, or nearly 2.5 pounds more cheese from 100 pounds of 4 per cent milk than from 100 pounds of 3.1 per cent milk.

(2) The yield of cheese per pound fat varies from 2.55 pounds to 2.81 pounds just about one-quarter of a pound.

(3) The yield of cheese per pound casein varies from 3.47 pounds to 4.68 pounds, almost $1\frac{1}{4}$ pound.

(4) The yield of cheese per pound fat and casein, added together, varies from 1.47 to 1.73 pounds, or exactly the same variation as in the pounds of cheese per pound of fat.

It may also be noted that the pounds of cheese per pound of fat, tends to decrease as the fat in the milk increases; while the pounds of cheese per pound of casein, and per pound of fat and casein, tends to increase as the per cent of fat in the milk increases.

Table III contains a mass of figures, but is exceedingly interesting and should be carefully studied by both factory men and patrons, as it shows the value of 100 pounds of milk calculated by the different methods herein mentioned for paying for milk made into cheese. The fat and casein basis of payment is the actual amount of fat and casein in the milk as shown by the Babcock test and the Walker casein test. Straight fat is figured from the fat test only.¹ Straight casein is figured from the casein test as shown by the Walker casein test. Fat + 2 means that the factor 2 was added to the reading of the Babcock test; for instance, 3.1 per cent is recorded as 5.1. Fat + calculated casein is the Babcock test with a sum added as shown in Table II, which will be found on page 278 of “Practical Cheesemaking,” by Van Slyke and Publow.

¹ So far as the writer knows, no one has ever advocated paying for cheese milk by the straight casein test, and these figures show that the method need not be considered.

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TABLE II.

Per Cent of Fat in Milk.	Dividend Number.	Per Cent of Fat in Milk.	Dividend Number.
3.00.....	5.10	3.55.....	5.87
3.05.....	5.17	3.60.....	5.94
3.10.....	5.24	3.65.....	6.01
3.15.....	5.31	3.70.....	6.08
3.20.....	5.38	3.75.....	6.15
3.25.....	5.45	3.80.....	6.22
3.30.....	5.52	3.85.....	6.29
3.35.....	5.59	3.90.....	6.36
3.40.....	5.66	3.95.....	6.43
3.45.....	5.73	4.00.....	6.50
3.50.....	5.80	4.05.....	6.57

Pooling is dividing the total money among the patrons at the same rate per 100 pounds of milk. The cheese is valued at 10 cents per pound.

TABLE III.—Showing different methods of paying for cheese milk. Cheese with equal moisture content 35 per cent and valued at 10 cents per pound.

Fat in milk.	Casein in milk.	Value of 100 Pounds of Milk.						
		Actual cheese made.	Fat and casein basis.	Fat + calculated casein basis.	Fat + 2 basis.	Straight fat basis.	Straight casein basis.	Pooling basis.
p.c.	p.c.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
3.10	2.10	82.9	83.6	85.6	87.9	84.0	83.1	93.5
3.10	2.30	85.2	86.8	85.6	87.9	84.0	90.0	93.5
3.15	2.45	87.3	90.0	86.8	88.7	85.3	96.9	93.5
3.20	2.30	86.3	88.4	87.9	89.6	86.7	90.0	93.5
3.25	2.00	91.0	84.4	89.1	90.4	88.1	79.1	93.5
3.30	2.40	92.7	91.7	90.2	91.3	89.4	95.0	93.5
3.30	2.40	90.6	91.7	90.2	91.3	89.4	95.0	93.5
3.40	2.60	95.6	96.5	92.5	93.0	92.1	102.9	93.5
3.40	2.30	91.5	91.7	92.5	93.0	92.1	90.0	93.5
3.40	2.00	93.6	86.8	92.5	93.0	92.1	79.1	93.5
3.40	2.50	86.8	94.9	92.5	93.0	92.1	98.9	93.5
3.50	2.45	95.4	95.7	94.8	94.8	94.8	96.9	93.5
3.55	2.45	95.9	96.5	95.9	95.6	96.2	96.9	93.5
3.65	2.40	93.2	97.3	98.2	97.3	99.0	95.0	93.5
3.70	2.40	99.2	98.7	99.4	98.2	100.2	95.0	93.5
3.80	2.50	102.1	101.1	101.7	99.9	102.9	98.9	93.5
4.00	2.60	107.5	106.1	106.2	103.4	108.4	102.9	93.5
4.00	2.35	104.9	102.1	106.2	103.4	108.4	93.0	93.5

The greatest differences in the value of 100 pounds of milk from the actual cheese made and the different methods of dividing the patrons' money are as follows:—

Pooling basis gives 10.6 cents over and 14 cents under; a variation of 24.6 cents.

Straight casein basis gives 12.1 cents over and 14.5 cents under; a variation of 26.6 cents.

Fat and casein basis gives 8.1 cents over and 6.8 cents under; a variation of 14.9 cents.

Fat + 2 gives 6.2 cents over and 4.1 cents under; a variation of 10.3 cents.

Straight fat basis gives 5.8 cents over and 3.5 cents under; a variation of 9.3 cents.

Fat + calculated casein basis gives 5.7 cents over and 3.1 cents under; a variation of 8.8 cents.

The surprising thing about these experiments is that the quantity of cheese made does not correspond with the actual amount of fat and casein in the milk, as shown by the Babcock test and the Walker casein test, and it would appear that there is not much to be gained by testing the milk for casein, as paying for cheese milk on a basis of the fat test, fat + 2 or fat + calculated casein will give results as near or nearer to the actual cheese made than paying on the basis of the actual fat and casein tests. Further, if we leave out the pooling method, there is not much choice between paying the patrons on the basis of straight fat, fat + 2, or fat + calculated casein, and no one would be far wrong if he used any one of these methods, but it is quite evident that paying for milk made into cheese at a uniform rate per 100 pounds is decidedly unfair and wrong.

The following table shows the total fat lost per 100 pounds of milk in manufacturing the cheese. The drippings from the curds after milling, and the whey from the press were carefully weighed and tested. The highest test from these drippings was 3.2 per cent; the lowest 1.1 per cent. The quantity of drippings from the curds after milling and during pressing averaged slightly over one-half pound per 100 pounds of milk.

TABLE IV.—Loss of Fat in Whey.

Per cent fat in milk.	Per cent casein in milk.	Per cent fat in whey at dipping.	Pounds fat lost per 100 pounds milk, in whey after milling.	Total pounds fat lost per 100 pounds of milk.
3.10	2.10	0.20	0.019	0.205
3.10	2.30	0.18	0.025	0.188
3.15	2.45	0.17	0.015	0.169
3.20	2.30	0.18	0.013	0.175
3.25	2.00	0.18		
3.30	2.40	0.13	0.019	0.135
3.30	2.40	0.19	0.024	0.195
3.40	2.60	0.21	0.002	0.191
3.40	2.30	0.20	0.023	0.202
3.40	2.00	0.19		
3.40	2.50	0.20	0.014	0.198
3.50	2.45	0.17	0.016	0.169
3.55	2.45	0.22		
3.65	2.40	0.15	0.028	0.160
3.70	2.40	0.22		
3.80	2.50	0.20	0.013	0.191
4.00	2.60	0.32	0.007	0.290
4.00	2.35	0.16	0.017	0.158

It is apparent from these experiments that there need be no greater loss of butter fat in manufacturing cheese from 4 per cent milk than from 3 per cent milk.

CHEESE FROM PASTEURIZED MILK.

A few lots of cheese were made during the past season from pasteurized milk with hydrochloric acid added after pasteurization. The main object of the work was to ascertain the effect pasteurization would have on the flavour of the cheese. Other details were not noted very carefully. Some 1,400 pounds of milk were put into a Jensen cream ripener to ensure thorough mixing. With the coil running, half of the milk was drawn off and put in a small cheese vat. The remainder was heated in the ripener to 160 degrees and cooled again to 80 degrees as quickly as possible, and then put in a small cheese vat where the

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cheese were made according to the directions given in Bulletin No. 165, Bureau of Animal Industry, Washington, D.C., "The Manufacture of Cheese of the Cheddar Type from Pasteurized Milk." The unpasteurized milk was made up in the ordinary way. Three-quarters of 1 per cent starter was used in both lots of milk. The average time from adding the rennet to salting the curds was 6 hours and 30 minutes with the raw milk, and 5 hours and 20 minutes with the pasteurized milk. The texture of the cheese from the pasteurized milk was smooth but rather weak and open for Canadian Cheddar cheese. I am of the opinion that this defect would be overcome if the curds were allowed to mature longer before adding the salt.

The following table shows the flavour of the cheese at different dates. The "A" lots are from pasteurized milk.

Exp. No.	DATE OF SCORING.		
	September 27.	November 3.	December 24.
A- 5....	Good flavour.....	Slight acid flavour.....	Clean.
B- 5....	Good flavour.....	Not quite clean.....	A little off.
A- 6...	Clean flavour.....	Clean.....	Not quite clean.
B- 6..	Clean flavour.....	Off flavour..	Quite off.
A- 7....	Clean flavour.....	Slight acid flavour	Nice and clean.
B- 7....	Clean flavour.....	Good flavour.....	Quite off.
A-11	Strong acid flavour	light acid flavour ..	Slight acid flavour.
B-11	Good flavour.....	Off flavour ..	Very badly off.
A-12....	Fairly clean.....	light acid flavour.....	light acid flavour.
B-12....	Good.....	Nippy flavour.....	Badly off.
A-26....	Slight acid flavour.....	Clean flavour.....	Clean.
B-26....	Clean flavour.....	Not quite as clean as A.....	Clean.

Acid flavour means hydrochloric acid flavour.

PASTEURIZATION OF CREAM FOR BUTTERMAKING.

The pasteurization of cream for buttermaking is becoming more general in Canada and, when properly done, will materially improve the keeping quality of creamery butter. There are various styles of pasteurizers on the market at the present time, and these different machines may be divided into two classes: (1) those in which the cream can be pasteurized and held at a certain temperature for any desired period and then cooled in the same machine; this is usually called the "holding" method of pasteurizing; (2) the continuous or "flash" method, which heats the cream almost instantly as it passes through the machine in a continuous stream and is cooled by running it over a separate cooler. The Brome creamery is equipped with both systems in such a manner that either can be used to handle all the cream received at the creamery, as well as for smaller experimental lots. For convenience in tabulating the results of the experiments, we will designate the holding method "A," the continuous method "B," and the raw cream "C." The equipment for "A" method was a 300-gallon Wizard agitator; for the "B" method a 2,000-pound capacity Simplex pasteurizer, and a 3,900-pound capacity Tubular cooler; and for the "C" method an ordinary cream vat. The churning was done in a small combined churn. The cooling was done with cold water and ice.

At the Brome creamery about two-thirds of the cream is separated at the creamery; the balance is delivered by patrons who are using hand separators. The cream from two skimming stations is also received.

Quality of the Butter.—In conducting this experiment, all the cream was put in a Wizard agitator and, with the discs running, a churning of the raw cream was drawn off, then the same quantity of cream was run through the Simplex pasteurizer, cooled with the Tubular cooler and ripened in an ordinary cream vat. The balance was pasteurized, cooled and ripened in the Wizard agitator. The experiment was repeated ten times between July 1 and 22. Ten per cent starter was used in all the lots of cream. The following tables show the averages of the ten churnings in each lot.

TABLE 1.

—	Pounds cream.	Per cent fat in cream.	Past. temp.	Time held at past. temp.	Per cent acidity in cream after past.	Acidity in cream at churning.
			deg.	min.		
A.....	210	34.0	140	20	0.194	0.455
B.....	210	33.5	171	2	0.187	0.411
C.....	210	33.7	.....	.....	0.213	0.473

—	Temp. of cream at churning.	Time churning.	Per cent fat in buttermilk.	Per cent moisture in butter.	AVERAGE SCORE FOR FLAVOUR OF BUTTER.	
					July 22.	Nov. 19.
	deg.	min.				
A.....	56.1	30.0	0.203	13.35	43.17	39.15
B.....	53.6	30.5	0.201	13.85	43.17	39.15
C.....	53.5	42.4	0.170	13.76	42.90	37.40

Notes on the Flavour of the Butter.—“A” lots: On July 22 the highest score was 43.5; the lowest was 42.75. On November 19 the highest score was 41 and the lowest 38. One lot made on July 10 showed a slight fishy flavour on November 19.

“B” lots: On July 22 the highest score was 43.5 and the lowest 42.75. On November 19 the highest score was 41.5 and the lowest 36.5. The butter scoring 36.5 was made July 10, and was fishy.

“C” lots: On July 22 the highest score was 43.75 and the lowest 42. On November 19 the highest score was 38.5 and the lowest 36. The butter that scored 43.75 in July was fishy in November, and scored only 37. The butter in this lot made on July 10 was not fishy on November 19.

On July 22 there was practically no difference in the commercial value of the three lots of butter. On November 19 the butter from the raw cream had gone off in flavour much more than the lots from pasteurized cream.

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As far as these experiments show there is no difference in the quality of the butter from either method of pasteurizing. The butter was scored on November 19 by Mr. J. D. Leclair, Inspector General of Creameries in Quebec.

Cost of Ice and Fuel.—The following table shows the average cost per 1,000 pounds of butter for ice and fuel in operating the creamery five days with each method of pasteurizing the cream:—

	Total pounds butter made.	Total pounds ice used.	Cost of ice per 1,000 pounds butter.	Cost of fuel per 1,000 pounds butter.	Total Cost for fuel and ice per 1,000 pounds. butter.	Average time creamery was in operation each day.
			cts.	\$ cts.	\$ cts.	
A.....	2,777	1,240	0.22	1.64	1.86	5 hr., 13 min.
B.....	2,711	200	0.02	1.53	1.55	4 " 57 "

The principal point of difference is in the quantity of ice used. With the full pressure of water from an overhead tank on the Tubular cooler, the cream was cooled almost to churning temperature, and very little ice was required in the water in the ordinary cream vat to hold the temperature overnight.

Cost of Apparatus for Pasteurizing the Cream.

A.—300-gallon Wizard agitator.....	\$ 550.00
B.—2,000-pound Simplex pasteurizer....	\$ 225.00
3,900-pound Tubular cooler.....	265.00
Ordinary cream vat.....	65.00
	555.00

Summary.

In operating the Brome creamery, the continuous pasteurizing method took slightly less time and fuel, and very much less ice. This method was found very convenient when part of the cream was pasteurized for city trade, as the cream could be run directly from the cooler into the shipping cans. Its disadvantage is a little more apparatus to clean. The ripener method has the advantage of being more compact as to floor space required and less apparatus to clean.

Flavour of Butter made from Ripened and Unripened Pasteurized Cream.—Butter made August 10 to 14.

A Lot.—Ten per cent starter added, ripened in the ordinary way and churned the following morning.
B Lot.—Twenty per cent starter added and churned same day.

Experiment.	Average time ripening.	Average acidity at churning.	Average fat in buttermilk.	Average score on flavour.
	hrs.			
A.....	2	0.25	0.22	42.2
B.....	18	0.36	0.23	41.4

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The butter was scored on November 19 by Mr. J. D. Leclair, Inspector General of Creameries in Quebec.

Churning the cream on the same day as it is received is not practicable in many creameries, but when it can be done there is little doubt about the quality of the butter being finer than when the cream is allowed to stand overnight.

Uniform Salting of Butter.

Complaints are made by buyers of butter in regard to the uneven salting of creamery butter. Considerable work was done at Brome on this point during the summer of 1914 in a small combined churn. Some buttermakers claim, however, that accurate results could not be secured in a small churn and, for this reason, the results obtained will not be published until further experiments are made with the large creamery churn.

Cow Testing.

During the year there were thirty-five Dairy Record Centres in operation with a recorder appointed by the department in charge of each. In addition to these centres, there were sixty-two points at which the cheese and buttermakers tested samples from herds in the different districts.

The work is being extended considerably in 1915 by organizing new associations or testing points where the recorders can give some oversight to the work. The cow-testing movement can be developed to a wonderful extent if the cheese and buttermakers could only be induced to do the testing of the samples. The increase in the milk supply from keeping records of individual cows would well repay the owners of cheese factories and creameries for any time or expense incurred in testing. The department is still providing preservative tablets, blank forms, acid, and a limited amount of glassware to these associations or testing points; also paying the person who does the testing 5 cents per test.

The reports of the supervisors of cow testing, Mr. Harvey Mitchell, Charlottetown, P.E.I.; Mr. H. W. Coleman, Perth, Ont.; and Mr. J. B. E. Trudel, Lac à la Tortue, Champlain county, Que., will be found interesting.

Mr. C. F. Whitley's report, as usual, covers in detail the work of cow testing, and contains much valuable information gleaned from the herd records received during the year.

I am much indebted to Mr. J. G. Bouchard, who conducted the experimental work on buttermaking at the Brome creamery; also to Mr. H. W. Coleman for valuable assistance in carrying on the experimental work on cheesemaking at the Finch dairy station.

Much credit is due Mr. B. A. Reddick, manager of the Finch dairy station, for creating so much interest in cow testing and also in assisting the Ontario District Representative in carrying on a Short Course in agriculture during the month of February, which was held in the curing room at the factory, with an attendance of twenty-six for the full course and a total attendance of eighty-one.

I am also very much indebted to Mr. J. D. Leclair, Inspector General of Creameries in the province of Quebec, for his kindness in scoring the experimental lots of butter in Montreal on November 19.

GEO. H. BARR,

Chief, Dairy Division.

OTTAWA, March 31, 1915.

APPENDIX IV.

COW TESTING, AND DAIRY RECORD CENTRES.

The general plan of conducting the work of cow testing in 1914 was much the same as in former years.

There is a considerable increase in the number of farmers who are keeping records of the cost of feed. Securing accurate figures regarding the feed consumed by a herd requires considerable time and care, but the results are well worth while, and the recorders are encouraging this feature of the work. This report must necessarily contain a great many figures, but they have been arranged in tabular form as concisely as possible.

TABLE 1.—Total Number of Herds, Cows and Babcock Tests made by Provinces, 1914.

Province.	Herds.	Cows.	Tests.
Ontario.....	798	8,681	57,239
Quebec....	642	6,158	38,569
New Brunswick.....	218	1,613	10,306
Nova Scotia...	269	1,649	10,638
Prince Edward Island.....	141	858	5,073
Saskatchewan	41	197	1,339
Totals.....	2,109	19,156	123,134

As in former years, very many farmers do not continue keeping records for the full lactation period. Keeping records for three or four months may give some idea of the quantity of milk the cows give, but the only way to *know* is to keep records for the full lactation period. This year there were 399 herds with 4,695 cows from which records were received for only part of the lactation period.

TABLE 2.—Showing Herds, Cows and Average Yields for Full Lactation Period by Provinces.

Province.	Number of Herds.	Number of Cows.	AVERAGE YIELD.		
			Milk.	Test.	Fat.
			Lb.	%	Lb.
Ontario.....	719	7,425	5,692	3·5	200·1
	*24	267	5,626	.....
Quebec.....	483	4,308	4,388	3·9	171·2
	*2	28	5,097	.....
New Brunswick.....	146	1,087	4,376	4·0	176·8
Nova Scotia.....	190	960	4,537	4·1	188·5
Prince Edward Island.....	117	628	5,505	3·7	207·3
	*1	7	6,182	.....
Saskatchewan.....	30	151	5,399	3·7	202·6
	1,685	14,559	5,121	3·69	189·4
	*27	302	5,441	.....
Totals.....	1,712	14,861	.....	.....

*Weights only.

The increase in herds recorded for the full lactation period over 1913 is 626, and the number of cows is 4,776. The average pounds of milk and pounds of fat is slightly lower than in 1913; the per cent of fat in the milk is ·09 higher.

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TABLE 3.—Average Yields of Cows Recorded for the Full Period of Lactation in each Dairy Record Centre and Association in the Province of Ontario, 1914.

Electoral District.	Name.	No. of Herds.	No. of Cows.	AVERAGE YIELD		
				Milk.	Test.	Fat.
	<i>Dairy Record Centre.</i>			Lb.	%	Lb.
Stormont..	Avonmore.....	47	537	5,290	3.5	186.4
Glengarry.....	Alexandria.....	31	358	5,616	3.6	204.0
Stormont.....	Cornwall.....	50	633	5,033	3.7	190.4
Grenville.....	Farmers' Union.....	47	436	5,558	3.5	194.2
".....	".....	*2	18	5,492		
Hastings.....	Frankford.....	59	562	6,166	3.5	216.9
Dundas.....	Hallville.....	48	585	5,212	3.5	182.4
".....	".....	3	33	4,654		
Oxford.....	Ingersoll.....	20	249	7,165	3.3	237.9
Kingston.....	Kingston.....	30	376	5,621	3.4	193.4
".....	".....	*1	25	5,342		
Perth.....	Listowel.....	54	523	6,875	3.4	234.1
Brockville.....	Mallorytown.....	28	377	5,653	3.4	192.5
".....	".....	*5	49	5,411		
Carleton.....	North Gower.....	49	478	5,056	3.6	183.3
Lanark.....	Perth.....	40	345	5,204	3.4	177.7
".....	".....	*11	126	5,977		
Peterborough.....	Peterborough.....	58	522	6,296	3.4	214.6
".....	".....	*1	7	5,765		
Renfrew, S. R.....	Renfrew.....	42	354	5,516	3.5	204.2
Ontario, N. R.....	Sunderland.....	26	182	5,576	4.0	226.4
	<i>Associations.</i>					
Durham.....	Port Hope.....	2	11	4,604	3.6	167.7
Glengarry.....	Martintown.....	11	200	4,889	3.6	175.7
Grenville.....	Prescott.....	1	21	7,050	3.1	224.1
Hastings.....	Plum Grove.....	3	31	7,498	3.1	235.6
Leeds.....	Newboro.....	7	105	5,312	3.5	186.7
".....	Westport.....	3	27	6,148	3.7	227.8
Peel.....	Star.....	1	9	6,081	3.1	191.2
Russell.....	Dalmeny.....	3	28	5,933	3.5	208.4
Renfrew.....	Navan.....	3	21	4,578	3.3	152.0
Stormont.....	Finch.....	9	119	5,189	3.4	180.3
".....	River Bank.....	2	17	3,920	3.7	145.0
Algoma.....	Echo Bay.....	4	7	4,924	3.5	173.0
".....	Gore Bay.....	2	9	4,614	3.3	155.6
".....	Silverwater....	6	25	4,776	3.6	172.3
Halton.....	Milton.....	2	12	6,632	3.6	240.1
Lincoln.....	Silverdale.....	5	29	5,915	3.6	216.1
Oxford, N. R.....	Cassel.....	2	16	6,614	3.4	228.4
".....	German Union.....	3	22	6,934	3.4	231.8
".....	Innerkip.....	3	43	6,761	3.3	224.0
Perth.....	Avonbank.....	2	17	7,838	3.5	275.1
".....	Black Creek.....	5	47	7,379	3.3	249.0
Wellington.....	Guelph.....	11	92	6,169	3.3	208.8
".....	".....	*1	9	1,136		
General average for the province—						
Weights and Tests.....		719	7,425	5,692	3.5	200.1
		*24	267	5,626		

*Weights only. (The average per cent of fat in 1913 was 3.6.)

TABLE 4.—Average Yields of Cows Recorded for the Full Period of Lactation in each Dairy Record Centre and Association in the Province of Quebec, 1914.

Electoral District.	Name.	No. of Herds.	No of. Cows.	AVERAGE YIELD		
				Milk.	Test.	Fat.
				lb.	%	lb.
<i>Dairy Record Centre.</i>						
Chicoutimi and Saguenay.....	Metabetchouan ..	19	234	4,327	4.0	173.6
Montmagny.....	Montmagny.....	75	558	4,134	3.8	157.7
Pontiac.....	Shawville.....	37	293	4,469	3.6	162.9
L'Islet.....	St. Aubert.....	41	276	3,877	4.1	160.8
Beauce.....	St. George.....	15	76	4,076	3.8	156.1
Dorchester.....	Ste. Henedine.....	31	240	3,796	3.8	146.1
St. Hyacinthe.....	St. Hyacinthe.....	61	570	5,057	3.8	195.3
Champlain.....	St. Prosper.....	41	436	4,270	3.8	164.5
Bellechasse.....	St. Raphael.....	41	270	3,935	4.1	161.4
Stanstead..	Way's Mills.....	53	671	4,768	3.9	188.0
<i>Associations.</i>						
Berthier.	Cap St. Gabriel.....	3	27	4,397	4.2	186.2
Berthier.	St. Damien de Brandon...	1	11	3,218	4.1	132.2
Bonaventure....	St. Alexis de Matapedia...	5	23	3,209	4.0	130.1
Brome.....	Brome.....	3	37	4,619	4.3	202.4
Chambly and Vercheres.....	Beloeil.....	4	38	4,692	3.7	177.5
Champlain.....	Ste. Genevieve.....	1	9	5,084	4.1	208.7
Chateauguay.....	Ornstown.....	1	16	6,025		
Chicoutimi and Saguenay.....	St. Prime.....	2	22	3,852	3.9	151.0
Compton.....	Martins Corners.....	3	38	4,405	4.2	188.2
Drummond and Arthabaska.....	St. Germain de Grantham	2	19	5,271	3.4	184.3
Huntingdon.....	Hallerton ..	*1	12	3,860		
Lotbiniere.....	Ste. Emelie.....	1	8	3,366	3.9	132.3
Megantic.....	East Leeds.....	7	48	3,923	3.7	146.3
Megantic.....	St. Pierre de Broughton...	5	32	3,827	3.5	137.4
Missisquoi.....	Cowansville.....	5	86	5,291	3.9	211.0
Missisquoi.....	Dairy Valley.....	1	8	5,575	3.5	197.9
Richmond.....	Richmond and Melbourne	1	8	5,841	3.8	224.6
Shefford ..	Mawcook.....	4	68	3,577	3.8	137.6
Shefford ..	Shefford Mountain.....	2	16	3,419	3.7	128.7
Shefford.....	Waterloo.....	2	35	5,850	3.5	206.0
Stanstead.....	Coaticook.....	1	13	4,243	4.3	184.4
Stanstead...	Dixville.....	5	48	3,947	4.1	165.3
Stanstead ..	St. Hermenegilde ..	5	41	3,503	4.3	150.7
Stanstead.....	North Hatley.....	6	49	4,666	3.7	173.4
General average for the province—						
Weights and Tests.....		483	4,308	4,388	3.9	171.2
		*2	28	5,097		

*Weights only. (The average percent of fat in 1913 was 3.9.)

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TABLE 5.—Average Yields of Cows recorded for the Full Period of Lactation in each Dairy Record Centre and Association in the Province of New Brunswick, 1914.

Electoral District.	Name.	No. of Herds.	No. of Cows.	AVERAGE YIELD.		
				Milk.	Test.	Fat.
	<i>Dairy Record Centre.</i>			lb.	%	lb.
Kings and Albert.	Sussex	47	540	4,903	4.0	200.7
Westmoreland.	St. Joseph	70	358	3,679	3.9	144.0
	<i>Associations.</i>					
Kings and Albert.	Hampton.	4	33	3,694	3.8	140.8
"	Kingston.	3	18	4,788	4.6	221.4
Sunbury and Queens.	Jerusalem.	10	58	3,520	4.0	144.1
York.	Manners Sutton	12	80	4,741	4.0	190.4
General average for the province.		146	1,087	4,376	4.0	176.8

(The average per cent of fat in 1913 was 4.0.)

TABLE 6.—Average Yields of Cows Recorded for the Full Period of Lactation in each Dairy Record Centre and Association in the Province of Nova Scotia, 1914.

Electoral District.	Name.	No. of Herds.	No. of Cows.	AVERAGE YIELD.		
				Milk.	Test.	Fat.
	<i>Dairy Record Centre.</i>			lb.	%	lb.
Antigonish.	Antigonish	24	146	3,809	4.0	153.3
Digby.	Clare	3	9	3,648	4.4	163.0
"	Meteghan	41	107	3,480	4.6	161.3
Pictou	Scotsburn	61	355	4,955	4.2	212.3
Colchester	Fraser	54	294	4,585	3.8	176.0
	<i>Associations.</i>					
Kings.	Kingston.	3	29	5,918	4.0	244.7
Yarmouth.	Yarmouth.	4	20	5,678	4.9	281.9
General average for the province.		190	960	4,537	4.1	188.5

(The average per cent of fat in 1913 was 4.3.)

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TABLE 7.—Average Yields of Cows Recorded for the Full Period of Lactation in each Dairy Record Centre and Association in the Province of Prince Edward Island, 1914.

Electoral District.	Name.	No. of Herds.	No. of Cows.	AVERAGE YIELD.		
				Milk.	Test.	Fat.
	<i>Dairy Record Centre.</i>			lb.	%	lb.
Queen's.	Crapaud.....	60	312	5,397	3.5	193.4
"	".....	* 1	7	6,182		
Prince.....	Kensington.....	50	268	5,314	3.9	207.9
	<i>Association.</i>					
Queen's.....	Marshfield.....	7	48	7,283	4.0	294.6
General average for the province.....		117	628	5,505	3.7	207.3
		* 1	7	6,182		

* Weights only.
(The average per cent of fat in 1913 was 3.9.)

TABLE 8.—Average Yields of Cows Recorded for the Full Period of Lactation in the Province of Saskatchewan, 1914.

Electoral District.	Name.	No. of Herds.	No. of Cows.	AVERAGE YIELD.		
				Milk.	Test.	Fat.
	<i>Dairy Record Centre.</i>			lb.	%	lb.
Battleford.....	Lloydminster.....	29	134	4,844	3.8	186.2
	<i>Association.</i>					
Moose Jaw.....	Boharm.	1	17	9,769	3.4	332.5
General average for the province.....		30	151	5,399	3.7	202.6

As in previous years, the differences last year in the average yields of milk and fat, whether between individual cows in the same herd, between herds in the same district, or between herds in different provinces, are very remarkable. Instead of making lengthy comment on these differences, attention is particularly directed to the following two tables showing some of the best herds, and some of the best individual cows.

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TABLE 9.—Yields of a Few of the Best Herds Recorded in 1911.

Province, Record Centre or Association.	Number of Cows in Herd.	AVERAGE YIELD.		
		Milk.	Test.	Fat.
		Lb.	%	Lb.
<i>Ontario—</i>				
Eatonville	5	11,448	3.2	365.8
"	8	11,421	3.4	384.6
Ingersoll	12	10,657	3.0	317.2
"	22	10,542	3.3	350.9
Perth	8	9,949	3.0	304.1
Innisburg	8	9,928	3.5	336.5
Burlington	9	9,718	3.1	300.3
Black Creek	9	9,275	3.1	294.8
<i>Quebec—</i>				
St. Hyacinthe	11	9,170	3.6	300.0
Way Mill	21	8,026	3.8	305.3
"	3	6,269	4.9	308.1
Waurivou	19	6,803	3.3	290.0
St. Aubert	6	6,370	4.4	282.7
"	3	6,734	4.0	273.2
<i>New Brunswick—</i>				
St. John	2	6,515	4.7	307.9
St. John	12	7,184	3.6	263.3
"	13	5,657	4.7	283.7
<i>Newfoundland—</i>				
St. John's	3	8,607	3.8	328.9
"	4	6,821	4.3	298.8
Yarmouth	6	6,145	5.1	315.3
<i>Prince Edward Island—</i>				
Marshfield	9	9,186	3.6	335.5
Crapaud	5	9,056	3.5	322.2
Kensington	5	8,601	3.8	327.6
<i>Saskatchewan—</i>				
Boharm	17	9,769	3.4	332.5
Lloydminster	3	7,653	3.3	254.6

These herds are instanced as samples of what our progressive dairymen are accomplishing through cow testing. Such good yields as 305, 332, and 350 pounds of fat per cow from herds of 21, 17 and 22 cows are full of encouragement.

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TABLE 10.—Yields of a Few of the Best Individual Cows Recorded in 1914.

Province, Record Centre or Association.	TOTAL YIELD.		
	Milk.	Test.	Fat.
	Lb.	%	Lb.
<i>Ontario—</i>			
Highland	18,250	2.8	505.0
Simcoe	15,930	3.3	528.2
Elgin	14,920	2.8	423.4
.....	13,680	3.5	481.2
Guelph	13,560	3.0	406.8
Cornwall	13,027	3.9	513.2
Perth	13,125	3.6	482.5
Hillsdale	12,704	3.5	442.2
Franklin	12,159	3.7	447.2
.....	12,587	2.9	366.0
Mallorytown	12,058	3.0	356.7
Kinross	12,012	3.1	370.0
<i>Quebec—</i>			
St. Hyacinthe	12,420	3.4	433.7
Way's Mills	12,200	3.1	384.7
.....	10,370	4.0	420.5
Waterloo	10,180	3.4	349.4
Dairy Valley	9,610	3.0	296.4
St. Prosper	8,979	3.7	336.4
Shawville	8,974	3.8	350.9
Brookville	8,664	5.7	496.1
<i>New Brunswick—</i>			
.....	9,885	3.8	380.4
.....	9,585	4.2	402.6
St. Joseph	8,140	5.2	424.0
.....	8,700	3.9	345.4
Manners Sutton	8,210	3.7	394.2
.....	7,890	3.9	312.7
<i>Nova Scotia—</i>			
Scotsburn	14,400	3.8	550.2
Kingston	11,940	4.3	512.5
.....	9,605	3.1	305.0
.....	8,896	4.9	423.0
Antigonish	8,665	3.7	327.6
.....	6,455	5.1	333.6
Yarmouth	8,425	5.3	449.0
<i>Prince Edward Island—</i>			
Crapaud	13,374	3.4	460.0
Marshfield	13,008	4.0	576.5
.....	12,242	2.9	366.3
.....	9,783	4.1	401.1
<i>Southwest—</i>			
Boonville	13,128	3.3	443.1
.....	12,714	3.6	459.0
Lloydminster	11,321	4.5	510.3

These yields of over 400 and 500 pounds of fat per cow are great tributes to the intelligence of the men in handling good producers. From this and the preceding table it will be seen that cow testing helps to establish good records in widely scattered districts.

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TABLE 11.—Summary of Average Monthly Yields, 1914.

Month and Province.	Number of Herds.	Number of Cows.	AVERAGE YIELD.		
			Milk.	Total.	Fat.
			Lb.	%	Lb.
January—					
Prince Edward Island.....	18	88	701	3.8	26.8
Nova Scotia.....	89	326	511	4.4	22.6
New Brunswick.....	60	326	493	4.4	21.4
Ontario.....	191	1,110	570	3.6	20.9
Quebec.....	64	481	478	4.2	20.1
General average yield.....	422	2,331	537	4.0	21.3
“ “ weights only.....	22	154	629		
February—					
Prince Edward Island.....	21	88	757	3.8	29.3
Ontario.....	211	1,021	698	3.6	25.2
Nova Scotia.....	92	329	570	4.3	23.6
New Brunswick.....	55	302	543	4.2	23.1
Quebec.....	77	473	551	3.7	20.2
General average yield.....	456	2,213	628	3.8	25.7
“ “ weights only.....	24	150	669		
March—					
Saskatchewan.....	14	52	803	3.5	32.0
Prince Edward Island.....	30	143	719	3.7	27.0
Ontario.....	255	1,609	738	3.4	25.4
Nova Scotia.....	93	344	575	4.2	24.0
New Brunswick.....	60	310	580	4.1	24.0
Quebec.....	122	616	612	3.6	23.5
General average yield.....	678	3,075	680	3.7	24.9
“ “ weights only.....	30	162	715		
April—					
Prince Edward Island.....	42	134	820	3.6	29.3
Ontario.....	558	3,555	740	3.4	26.2
Saskatchewan.....	22	72	678	3.6	24.2
Nova Scotia.....	149	640	581	4.1	23.8
New Brunswick.....	60	396	582	3.9	23.1
Quebec.....	155	1,615	636	3.6	22.5
General average yield.....	1,094	6,412	712	3.5	24.9
“ “ weights only.....	30	288	658		
May—					
Ontario.....	730	6,150	886	3.3	29.8
Prince Edward Island.....	68	255	777	3.6	27.6
Saskatchewan.....	28	129	675	3.6	23.7
Quebec.....	472	3,601	659	3.6	23.7
New Brunswick.....	138	936	611	3.8	23.1
Nova Scotia.....	197	926	573	3.9	22.8
General average yield.....	1,633	11,997	763	3.4	26.8
“ “ weights only.....	52	407	800		
June—					
Ontario.....	760	7,452	915	3.3	30.6
Prince Edward Island.....	98	507	862	3.5	30.5
Saskatchewan.....	37	175	745	3.7	27.4
Quebec.....	555	5,070	717	3.7	26.1
New Brunswick.....	188	1,355	658	3.9	25.9
Nova Scotia.....	252	1,389	578	4.0	23.1
General average yield.....	1,920	15,948	791	3.5	28.1
“ “ weights only.....	38	419	847		

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During 1914 the number of samples of milk tested each month in the Dominion varied from 2,213 in February to 17,342 in July. The total number tested during the year was 123,134 samples with an average of 3.71 per cent of fat.

TABLE 12.—Average percentage of Fat by Months and Provinces.

MONTH, 1914.	ONTARIO.		QUEBEC.		NEW BRUNSWICK.		NOVA SCOTIA.		P. E. ISLAND.		SASKAT- CHEWAN.		TOTAL COWS. AVERAGE FAT.	
	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.	No. of Cows.	Per Cent Fat.
January..	1,110	3.6	481	4.2	326	4.4	326	4.4	88	3.8			2,331	4.0
February..	1,021	3.6	473	3.7	302	4.2	329	4.3		3.6			2,213	3.8
March.....	1,609	3.4	616	3.8	340	4.1	344	4.2	111	3.7	52	5.5	3,075	3.7
April.....	3,552	3.4	1,615	3.6	390	3.9	640	4.1	131	3.6	72	3.6	6,412	3.5
May.....	6,154	3.5	3,601	3.6	950	3.8	1,200	3.9	255	3.6	129	3.6	11,997	3.4
June.....	7,452	3.7	5,070	3.7	1,355	3.9	1,359	4.0	507	3.5	175	3.7	15,948	3.5
July.....	7,522	3.3	5,890	3.7	1,465	3.9	1,618	4.0	600	3.7	175	3.7	17,342	3.6
August.....	7,408	3.4	5,555	3.7	1,536	4.0	1,469	4.0	861	3.6	160	3.9	16,938	3.7
September	7,012	3.6	5,351	4.1	1,349	4.2	1,243	4.2	708	3.5	178	4.1	15,901	3.8
October...	6,417	3.8	4,535	4.3	1,051	4.2	700	4.2	680	3.9	140	4.1	13,761	4.0
November	4,948	3.8	3,337	4.5	730	4.5	766	4.4	568	4.1	125	4.1	10,474	4.1
December	3,035	3.9	2,039	4.6	493	4.1	655	4.3	396	4.1	121	4.1	6,742	4.2

DAIRY RECORD CENTRES.

There were thirty-five dairy record centres in operation during 1914 at each one of which an official of this branch, termed a recorder, devoted his time to the interests of dairying. Besides the actual work of testing milk samples every month, considerable time was spent by the recorders in consultation with the dairymen of the several districts, addressing meetings, attending fall fairs; and in some cases, at the special request of the Ontario Department of Agriculture District Representative, assisting with short courses in agriculture and introducing milk testing in schools.

As a direct outcome of the recorder's influence there are not only satisfactory increases in the yield of milk per cow, but decided improvement in the general run of dairy farming, evidenced by the introduction of pure bred dairy sires, the erection of silos and great improvements in dairy stables.

Some of the information collected by the recorders in taking a dairy census in each district is tabulated below.

TABLE 13.—Dairy Record Centres, 1914, Summary.

Dairy Record Centre.	Total Number of Herds.	Total Number of Cows.	Average Yield per Cow.	Average Yield per Acre Cultivated including Pasture.	Average Number of Cows kept per 100 Acres.	Average Feed Cost of 100 pounds of Milk.	Average Cash Receipts per Cow with Milk at \$1.10 per 100 pounds.	Estimated Cost of Feed per Cow.	Average Profit per Cow over Cost of Feed.
			Lb. Milk	Lb. Milk		Cts.	\$ cts.	\$ cts.	\$ cts.
Alexandria, Ont.	13	151	5,424	518	10	63	59 67	34 21	25 46
Cornwall, Ont.	20	228	5,169	477	10	67	56 86	34 56	22 27
Farmers' Union, Ont.	40	388	5,822	451	8	69	64 05	40 35	23 70
Halvill, Ont.	5	43	4,217	384	9	81	46 38	35 86	11 22
Kingston, Ont.	8	116	5,391	499	9	80	60 24	41 19	19 05
Listowel, Ont.	37	400	6,620	712	11	71	72 82	47 00	24 00
Mallorytown, Ont. .	15	238	5,106	511	10	78	56 17	39 98	14 19
North Gower, Ont. .	20	227	5,279	460	8	65	58 07	39 00	19 07
Perth, Ont.	5	57	5,089	362	7	62	55 01	32 04	23 94
Peterboro, Ont.	6	16	5,323	428	8	79	58 55	42 35	16 20
Renfrew, Ont.	10	118	6,589	471	7	69	72 48	46 00	26 48
Totals and averages for Ontario.	179	1,955	5,816	515	9	70	64 41	41 26	23 15
St. Aubert, Que.	40	282	3,726	226	6	53	40 97	21 81	19 17
St. George, Que.	5	49	3,868	199	5	78	40 32	23 95	11 37
Ste. Henedine, Que. .	31	260	4,067	329	8	75	44 73	30 77	13 96
St. Hyacinthe, Que. .	61	570	5,057	386	7	66	55 63	33 36	22 27
St. Prosper, Que. ...	34	340	4,406	419	9	74	43 47	32 75	15 72
St. Raphael, Que. ...	40	272	3,883	274	7	74	42 71	28 87	13 84
Metabetchouan, Que. .	26	379	3,338	415	13	81	36 72	28 72	8 00
Montmagny, Que. ...	80	3	4,044	327	8	76	44 48	30 71	13 75
Ways Mills, Que.	10	150	*201.7	*17.2	8	*20	60 51	43 96	16 55
Totals and averages for Quebec.	325	3,017	4,163	338	8	72	46 52	30 86	15 66
Crapaud, P.E.I.	31	189	5,573	411	7	75	60 78	42 22	18 56
Kensington, P.E.I. .	31	189	5,425	330	6	68	59 68	37 16	12 52
Antigonish, N.S.	12	104	3,516	430	9	93	47 23	32 13	15 10
Clare, N.S.	3	11	*204	*15	7	*17	61 22	35 29	25 93
Meteghan, N.S.	4	12	4,519	577	11	74	47 71	33 15	15 56
Truro, N.S.	11	22	*176	*16	9	*22	52 93	39 28	13 65
St. Joseph, N.B.	65	355	3,627	224	6	85	40 32	31 04	8 28
Sussex, N.B.	11	142	4,008	*25	13	*18	61 78	38 03	21 75
Totals and averages for Maritime Provinces.	170	1,094	4,465	320	8	77	50 77	23 25	22 50
Milk Districts.						51	49 11	23 53	25 58
Fat Districts.						20	50 77	28 25	22 50

*As Ways Mills, Que.; Clare, N.S.; Truro, N.S.; and Sussex, N.B.; are creamery sections, the yield per cow is taken in pounds of fat, valued at 30 cents per pound.

COST OF MILK PRODUCTION.

Without entering into any elaborate calculation, one which would include such actualities as interest on investment, taxes, insurance, etc., it is of decided importance to every dairy farmer to know if each cow that he is keeping yields a fair return for the feed consumed. Even leaving aside the items of skim-milk, labour, calf, manure, and making the simplest of calculations, the value of the milk produced and the value of the feed consumed, a flood of light is shed on the variation in profit returned by cows.

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The following statements of last year's work are therefore presented so that dairymen may be induced to look carefully into this all-important question of obtaining a good profit from each cow.

TABLE 14.—Comparison between Eight of the Best and Eight of the Poorer Cows in Avonmore, Ont., Dairy Record Centre, showing differences in Yield, Cost of Production and Profits.

EIGHT COWS WITH HIGH YIELDS OF MILK.

Cow Number.	Age.	Yield, Pounds of Milk.	Value at \$0.15 per 100 Pounds.	Feed Cost.	Profit Per Cow.
			\$ cts.	\$ cts.	\$ cts.
1.....	7	6,425	70 67	37 68	32 99
2.....	11	6,640	76 36	40 00	36 27
3.....	8	6,411	73 72	42 77	30 95
4.....	7	8,522	98 00	51 28	46 72
5.....	8	8,051	88 76	51 57	36 99
6.....	7	7,120	81 97	45 34	36 61
7.....	8	7,089	81 42	49 92	31 50
8.....	6	6,220	69 33	33 09	36 24
Total.....		56,478	519 49	351 76	297 73

Average net profit per 100 pounds of milk, 54 cents.
Average cost of producing 100 pounds of milk, 62 cents.

EIGHT COWS WITH LOW YIELDS OF MILK.

Cow Number.	Age.	Yield, Pounds of Milk.	Value at \$1.15 per 100 Pounds.	Feed Cost.	Profit Per Cow.
			\$ cts.	\$ cts.	\$ cts.
1.....	6	3,180	36 57	25 05	11 52
2.....	6	4,400	50 60	37 39	13 21
3.....	7	4,299	49 43	36 18	13 25
4.....	5	3,691	42 44	31 65	10 79
5.....	5	3,450	39 67	31 65	8 02
6.....	7	4,273	49 13	35 72	13 41
7.....	7	3,876	44 57	29 34	15 23
8.....	6	4,125	47 43	31 70	15 73
Total.....		31,294	359 88	258 98	101 20

Average net profit per 100 pounds of milk, 32 cents.
Average cost of producing 100 pounds of milk, 82 cents.

From these comparisons it is readily seen that:—

(1) Cows that give fairly large yields of milk (6,000, 7,000 and 8,000 pounds) even when costing fifty dollars to feed, may be economical producers. For the average of the eight high yields is a feed cost of only 62 cents per 100 pounds of milk, and the individual profit above cost of feed is as high as \$46.72.

(2) Conversely, the cows with only medium or low yields, though fed cheaper, are more expensive to keep. The eight cows with the low yields make only 32 cents profit on the 100 pounds of milk (compared with 54 cents profit from the high yielders) and the milk costs 20 cents per 100 more to produce.

(3) The individual profit above cost of feed varies to a remarkable degree, \$8.02 on the year's business, up to \$46.72.

Dairy records alone can bring out these facts.

TABLE 15.—Showing Variation in Feed Cost of Milk at Avonmore, Ont., Dairy Record Centre.

Herd.	No. of Cows.	Average Yield per Cow, Pounds of Milk.	Average Cash Returns per Cow, at \$1.15 per 100 Pounds Milk.	Cost of Feed per Cow.	Profit per Cow over Feed Cost.	Feed Cost per 100 Pounds Milk.
			\$ cts.	\$ cts.	\$ cts.	Cents.
A.....	13	3,831	44 05	32 17	11 88	84.9
B.....	12	5,692	65 45	47 06	18 39	82.6
C.....	10	4,994	57 43	40 32	18 61	80.7
D.....	8	5,187	59 65	39 85	19 80	76.8
E.....	19	4,111	47 27	31 70	15 57	77.1
F.....	14	4,233	48 67	31 76	16 91	75.0
G.....	7	6,700	77 05	47 96	29 09	71.5
H.....	10	4,622	53 15	31 48	21 57	68.1
I.....	9	4,707	51 13	29 65	25 48	62.5

Again it is seen that the low yield of milk (3,831 pounds) is the expensive milk, costing, 84.9 cents per 100 pounds for feed, while the average profit per cow for all of the thirteen in the herd is only \$11.88.

Large profits per cow may come from high feed costs.

Probably a more careful study of the individualities of the cows in herd B would result in a larger profit than \$18.39 from feed valued at \$47.06.

Dairy records aid in the selection of cows that are economical producers and that give large profits.

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TABLE 16.—Contrasts between Four of the Best and Four of the Poorer Herds in Cornwall, Ont., Dairy Record Centre.

FOUR BEST HERDS.						
Herd No.	No. of Cows.	Pounds of Milk per Cow.	Returns per Cow at \$1.10 for Milk.	Cost of Feed per Cow.	Net Profit per Cow.	Total Profit from Herd.
			\$ cts.	\$ cts.	\$ cts.	\$ cts.
A.....	9	6,052	66 57	28 99	37 58	338 22
B.....	10	6,113	67 24	30 07	37 17	371 70
C.....	12	5,995	65 94	29 40	36 54	448 48
D.....	12	5,588	61 49	29 66	31 83	381 96
Total	43					1,540 36

FOUR POORER HERDS.						
			\$ cts.	\$ cts.	\$ cts.	\$ cts.
A.....	8	4,627	50 89	35 68	15 21	121 68
B.....	14	4,961	54 57	39 61	14 96	209 44
C.....	13	3,830	42 13	30 56	11 57	150 41
D.....	15	5,344	58 78	49 82	8 96	134 40
Total	50					615 93

The forty-three cows of the best herds show a total net profit of \$1,540.36, while fifty cows (seven more) of the poorer herds show a total profit of only \$615.93.

(Cost of feed taken from actual feed records handed in each month.)

TABLE 17.—Showing Typical Differences in the Earning Capacity between Cows in the Same Herd. Listowel, Ont., Dairy Record Centre.

Herd No.	Average Yield of Milk per Cow.	Value of Milk	Value of Feed	Feed Cost per 100 pounds Milk	Net Profit per Cow.
	Pounds.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1. Best cow.....	6,640	76 30	40 09	.60	36 21
Poorest cow.....	4,367	50 22	36 40	.83	13 73
2. Best cow.....	6,411	75 64	42 77	.67	32 87
Poorest cow.....	5,079	59 93	42 50	.83	17 41
3. Best cow.....	5,900	67 85	36 94	.62	30 91
Poorest cow.....	4,299	49 43	36 18	.84	13 25

From this table it appears that even where the lowest yield of milk is as much as 4,000 pounds, the fact of that type of cow consuming as much feed as a heavier producer pulls her profit down considerably.

The net profits of \$13 and \$30 given by the two cows in herd 3 mean that one cow is more than twice as valuable as the other as a profit maker.

TABLE 18.—Comparisons at Listowel, Ont., Dairy Record Centre.

SIX OF THE BEST HERDS.

Herd No.	No. of Cows.	Average Yield per Cow.	Average Yield per Cow.	Returns per Cow Milk at \$1.10 cwt.	Cost of Feed per Cow.	Net Profit per Cow.	Cost of Producing 100 pounds of Milk.
		Lb. Milk.	Lb. Fat.	\$ cts.	\$ cts.	\$ cts.	Cts.
A.....	19	9,081	290.4	99 89	62 35	37 54	63.6
B.....	8	11,097	371.3	122 06	60 04	62 02	54.1
C.....	13	8,459	271.4	93 04	50 50	42 94	59.7
D.....	16	8,472	272.3	93 19	45 25	47 94	53.2
E.....	10	8,276	265.6	91 04	53 90	38 13	63.9
F.....	12	8,391	271.8	92 30	49 70	42 60	59.2
Average.....	69	8,819	287.0	97 00	52 73	44 27	59.7

SEVEN OF THE POORER HERDS.

A.....	8	5,773	194.5	63 50	47 50	16 00	82.2
B.....	13	5,003	177.2	62 54	48 08	14 46	84.2
C.....	10	4,762	164.3	52 48	36 19	16 29	75.9
D.....	11	5,583	185.5	61 41	42 95	18 46	76.9
E.....	9	4,490	149.7	49 39	45 55	3 84	\$1.01
F.....	10	5,197	194.1	57 16	45 03	12 16	86.7
G.....	12	5,551	199.0	64 98	38 16	26 82	65.1
Average.....	73	5,369	181.1	59 05	43 25	15 80	80.5

The sixty-nine cows in the six herds produced 608,578 pounds of milk and 19,805 pounds of fat, worth \$6,694.35.

The seventy-three cows in the seven herds produced 391,872 pounds of milk and 13,220 pounds of fat, worth \$4,310.59.

Is it not self-evident that every farmer should know whether a cow produces milk at 54 cents or \$1.01 per 100 pounds?

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TABLE 19.—Comparisons at North Gower, Ont., Dairy Record Centre.

FOUR OF THE BEST HERDS.

Herd No.	No. of Cows.	Pounds of Milk per Cow.	Value. of Milk at \$1.10.	Cost of Feed per Cow.	Profit per Cow.	Cost of producing 100 pounds of Milk.
			\$ cts.	\$ cts.	\$ cts.	Cts.
A.....	11	6,152	67 87	30 30	37 37	49
B.....	8	6,735	74 08	40 52	33 56	60
C.....	7	5,991	65 90	37 72	28 18	62
D.....	10	5,938	65 31	36 28	29 06	61
E.....	14	5,927	65 19	37 00	28 19	62
Total.....	50	6,117	67 28	36 04	31 24	58

FIVE OF THE POORER HERDS.

A.....	11	4,383	48 45	37 00	11 45	84
B.....	12	4,164	45 80	33 72	12 08	80
C.....	9	4,259	46 83	37 67	9 17	88
D.....	14	4,670	51 37	34 99	16 74	74
E.....	13	4,705	51 75	37 00	19 75	68
Total.....	59	4,409	49 06	34 85	14 20	78

The fifty cows which comprised the six best herds gave 305,861 pounds of milk, worth \$3,364.47; while the fifty-nine cows which made up the five poorer herds gave only 263,130 pounds, worth \$2,894.43. The cost of feed for above tables is computed from monthly feed records handed to the recorder each month by the farmers.

TABLE 20.—Some of the Best and Poorest Herds at Oxford Mills, Ontario, Dairy Record Centre.

SIX GOOD HERDS.

Herds.	No. of Cows.	Average Pounds of Milk per Cow.	Cash Returns per Cow at \$1.10 per 100 pounds.	Cost of Feed per Cow.	Profit per Cow.	Cost of Producing 100 pounds of Milk.
			\$ cts.	\$ cts.	\$ cts.	Cts.
A.....	2	8,845	97 29	58 05	39 14	64
B.....	16	7,890	86 79	50 87	35 92	64
C.....	10	7,783	85 61	50 00	35 61	64
D.....	9	7,801	85 80	47 00	38 80	60
E.....	11	7,900	86 90	44 00	42 90	55
F.....	15	7,700	84 70	44 00	40 70	57
Average.....	63	7,847	86 31	46 62	39 69	59

SIX POORER HERDS.

A.....	11	3,103	34 13	30 10	4 03	97
B.....	6	4,435	48 78	35 00	13 78	78
C.....	12	5,255	57 80	40 80	17 00	77
D.....	16	4,767	52 44	35 36	17 08	74
E.....	16	4,988	54 64	39 45	15 19	79
F.....	13	4,763	52 39	37 00	15 39	78
Average.....	74	4,615	50 76	36 74	14 02	79

With feed averaging \$9.88 per cow more, the cows in the six good herds produced milk at 20 cents per hundred less cost.

The sixty-three cows which comprised the six better herds produced 494,371 pounds of milk worth, at \$1.10 per 100 pounds, \$5,438.08.

The seventy-four cows in the six poorer herds produced only 341,567 pounds of milk worth, at the same price, \$3,767.23, a difference in favour of the better cows of just \$1,670.85.

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TABLE 21.—Typical Contrasts between the 100 Best Cows and the 100 Poorest Cows in Four Districts.

ST. AUBERT, QUE., DAIRY RECORD CENTRE.

Yield of	Average Milk Yield.	Value at \$1.10 per 100 pounds	Estimated Cost of Feed per Cow.	Feed Cost per 100 pounds Milk.	Profit per Cow.
	Pounds.	\$ cts.	\$ cts.	cts.	\$ cts.
100 Best cows.....	4,841	53 25	23 44	.48	29 81
100 Poorest cows.....	2,690	29 59	20 45	.76	9 14
Difference.....	2,151	23 66	2 99	.27	20 67

MONTMAGNY, QUE. DAIRY RECORD CENTRE.

100 Best cows.....	5,407	59 47	33 86	.63	25 61
100 Poorest cows.....	2,591	28 50	26 96	1 05	1 54
Difference.....	2,816	30 97	6 90	.41	24 07

ST. HYACINTHE, QUE., DAIRY RECORD CENTRE.

100 Best cows.....	7,343	80 77	42 00	.57	38 79
100 Poorest cows.....	3,258	35 83	32 00	.95	3 83
Difference.....	4,085	44 94	10 00	.37	34 96

STE. HENEDINE, QUE., DAIRY RECORD CENTRE.

100 Best cows.....	5,220	57 42	34 00	.65	23 42
100 Poorest cows.....	3,077	33 84	26 00	.84	7 84
Difference.....	2,143	23 58	8 00	.19	15 58

The difference in the profit made per cow in these four groups is noteworthy. Thus at Montmagny, Que., for instance, each one of the best cows makes as much profit as sixteen of the poorest.

TABLE 22.—Average Pounds of Milk and Butter Fat, and Profit in Twenty-Six Herds at St. Joseph Dairy Record Centre, New Brunswick. (Profits do not include the value of skim milk).

THIRTEEN GOOD HERDS.

	Pounds of Milk.	Pounds of Fat.	Cost of Feed.	Profit.
			\$ cts.	\$ cts.
Average of 13 herds.....	5,002	207.4	38 55	17 11
" Best herd.....	6,730	318.2	47 50	38 41
" Poorest herd.....	3,291	132.3	29 00	6 72
" Best cow in each herd.....	8,579	444.6	47 50	72 54
" Poorest cow in each herd.....	3,650	135.2	50 53	*14 03

THIRTEEN POOR HERDS.

	Pounds of Milk.	Pounds of Fat.	Cost of Feed.	Profit.
			\$ cts.	\$ cts.
Average of 13 herds.....	2,624	108.9	27 10	* 06
" Best herd.....	2,922	102.7	25 00	2 75
" Poorest herd.....	2,054	77.0	27 00	* 6 21
" Best cow in each herd.....	4,100	157.9	25 50	17 13
" Poorest cow in each herd.....	1,930	66.2	37 25	*19 38

*Loss.

The keeping of dairy records will point unerringly to the profitable cows. In the light of these remarkable contrasts, surely there is inspiration for obtaining substantial profit. Why should any cow be kept at a loss, when \$72.54 profit is being obtained?

TABLE 23.—Average Pounds of Milk and Butter Fat, and Profit in Eleven Herds at Sussex Dairy Record Centre, New Brunswick. (Profits do not include value of skim-milk).

	Pounds of milk.	Pounds of fat.	Cost of feed.	Profit.
			\$ cts.	\$ cts.
Average of Eleven herds.....	4,685	207.6	44 26	16 08
" Best herd.....	4,744	234.9	43 52	24 60
" Poorest herd.....	3,113	145.1	48 18	6 11
" Best cow in each herd.....	9,420	390.7	65 98	47 32
" Poorest cow in each herd.....	4,080	163.4	65 98	*18 60

*Loss

With individual records of 9,420 pounds of milk, there is every encouragement for men whose cows give only 1,930 pounds, (as in table 22.)

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TABLE 21.—Average Pounds of Milk and Butter Fat, and Profit in Ten Herds at Scotsburn, N.S., Dairy Record Centre. (Profits given do not include the value of the skim-milk).

	Pounds of milk.	Pounds of fat.	Cost of of feed.	Profit.
			\$ cts.	\$ cts.
Average of Ten herds.....	5,471	211.6	44 64	26 35
“ Best herd.....	5,978	297.0	40 34	50 89
“ Poorest herd.....	4,497	200.5	55 05	2 40
“ Best cow in each herd.....	6,759	305.2	44 64	10 25
“ Poorest cow in each herd.....	4,356	190.9	44 64	15 48

A profit of only \$2.40 per cow in 365 days does not look very remunerative, especially when a neighbour is obtaining \$50.89.

The record of a herd at Penobsquis in the Sussex, N.B., Dairy Record Centre is of interest.

The average yield of nineteen cows is 5,012 pounds of milk and 244 pounds of fat; with feed valued at \$35.36, the average profit per cow above cost of feed is \$22.85. The lowest profit made by any one cow is \$6.69, and the highest profit \$35.51. *Each cow in the herd makes a fair profit.*

A decided contrast between two herds of seven cows each is found at Scotsburn, N.S., Dairy Record Centre.

Herd A has an average yield of 7,255 pounds of milk and 342 pounds of fat, with a clear profit above cost of feed (valued at \$54.86) of \$46.86 per cow.

Herd B has an average yield of 5,978 pounds of milk and 297 pounds of fat, but shows a clear profit above cost of feed (valued at \$55.05) of only \$2.40 per cow.

In other words, each cow in herd A makes as much net profit as *nineteen* of those in herd B.

TABLE 25.—Comparisons in Six Herds at Kensington, P.E.I., Dairy Record Centre.

Herd No.	Cows.	Pounds of milk.	Pounds of fat.	Price for	Average	Profit.
				for fat.	Cost of Feed.	
				cts.	\$ cts.	\$ cts.
1	Ten cows.....	6,611	270.0	29.1	35 11	43 46
	Best cow.....	7,903	322.8	29.1	35 11	58 82
	Poorest cow.....	4,800	167.2	28.1	35 11	13 54
2	Eight cows.....	5,867	230.1	30	33 22	35 81
	Best cow.....	7,874	325.2	30	33 22	64 34
	Poorest cow.....	5,033	198.3	30	33 22	26 27
3	Five cows.....	6,013	236.9	30.25	41 60	30 06
	Best cow.....	7,401	283.8	30.25	41 60	44 25
	Poorest cow.....	4,974	179.0	30.25	41 60	12 54
4	Four cows.....	4,395	177.3	30	26 00	27 19
	Best cow.....	5,825	210.2	30	26 00	37 06
	Poorest cow.....	3,334	133.8	30	26 00	14 14
5	Eight cows.....	6,412	243.1	28	49 12	18 94
	Best cow.....	7,809	320.1	28	49 12	40 50
	Poorest cow.....	5,053	203.6	28	49 12	7 88
6	Eight cows.....	3,786	134.5	28	27 37	10 29
	Best cow.....	4,583	179.0	28	27 37	22 75
	Poorest cow.....	3,233	106.1	28	27 37	2 97

It will be noticed in the above table that the average profit for any one of these six herds varies from \$10.29 up to \$43.46 per cow. Between the highest profit (\$64.34) made by one cow and the lowest (\$2.97) there is an extraordinary difference; *one cow making as much profit as twenty-one.*

PURE-BRED DAIRY SIRES.

TABLE 26.—Comparison of a few Herds Showing the Value of a Pure-bred Sire at Oxford Mills, Ont., Dairy Record Centre.

GRADE SIRE.				PURE-BRED SIRE.			
Herd No.	No. of cows.	Total pounds of milk from the herd.	Average pounds of milk per cow.	Herd No.	No. of cows.	Total pounds of milk from the herd.	Average pounds of milk per cow.
1	6	27,210	4,535	1	11	73,139	6,649
2	14	63,490	4,535	2	10	72,700	7,270
3	16	76,285	4,767	3	16	126,241	7,889
4	11	60,473	5,497	4	13	93,304	7,177
5	7	33,026	4,718	5	7	49,224	7,032
6	13	36,575	3,325	6	6	70,209	7,801
7	11	33,110	3,010	7	11	64,394	5,854
8	6	26,610	4,435	8	10	77,830	7,783
Total.....	84	356,779	4,247		84	627,041	7,464

The eighty-four cows in herds headed by pure-bred sires give actually 270,262 pounds of milk more.

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TABLE 27.—Ways Mills, Que., Dairy Record Centre.

GRADE SIRE.					PURE-BRED SIRE.				
Herd No.	No. of cows.	Average pounds of milk per cow.	Average pounds of fat per cow.	Value at 30cts. per lb.	Herd No.	No. of cows.	Average pounds of milk per cow.	Average pounds of fat per cow.	Value at 30 cts. per lb.
A.....	13	3,835	124.9	\$37 47	A.....	21	6,458	302.6	\$90 78
B.....	18	2,918	133.6	40 03	B.....	22	4,919	200.5	60 15
C.....	18	3,746	133.0	39 90	C.....	15	5,112	205.3	61 59
D.....	15	4,154	166.8	50 04	D.....	19	5,170	295.5	88 65
E.....	9	3,548	127.3	38 19	E.....	13	5,263	226.7	68 01
F.....	8	4,228	154.4	46 32	F.....	13	5,100	238.2	71 46
Total..	81	3,738	140.0	\$42 00	..	103	5,342	244.8	73 44

In the herds headed by a pure-bred sire the average income per cow is \$73.44, or \$31.44 more per cow.

TABLE 28.—St. Hyacinthe, Que., Dairy Record Centre.

GRADE SIRE.					PURE-BRED SIRE.				
Herd No.	No. of cows.	Average pounds of milk per cow.	Average pounds of fat per cow.	Value at 30 cts. per lb.	Herd No.	No. of cows.	Average pounds of milk per cow.	Average pounds of fat per cow.	Value at 30 cts. per lb.
A.....	11	3,784	151.9	\$45 57	A.....	10	7,611	281.0	\$84 30
B.....	11	2,995	141.6	42 48	B.....	10	6,955	283.8	84 84
C.....	8	3,717	137.7	41 31	C.....	11	6,642	278.0	83 40
D.....	9	3,367	132.7	39 81	D.....	8	5,077	228.3	68 49
E.....	11	3,655	145.4	43 62	E.....	11	9,169	329.8	98 94
Totals...	50	174,934	6,934.2	\$2,080 26	..	50	360,201	14,160.3	\$4,248 09

From these three tables showing returns in herds at three dairy record centres, it is immediately apparent that the value of a pure-bred dairy sire on the average grade herd is of immense importance.

At St. Hyacinthe, Que., for example, the difference between the two lots of fifty cows is an *additional* yield of 185,267 pounds of milk. In other words the influence of the pure-bred sire is largely responsible for an *increased yield* of 3,705 pounds of milk per cow.

SOME SAMPLE INCREASES IN YIELD OF MILK PER COW.

At Oxford Mills, Ont., the average increase of 165 cows in fourteen herds between 1912 and 1914 is 833 pounds of milk per cow.

At Listowel, Ont., there are twenty-six herds showing good increases, many of them over 1,300 pounds of milk and 44 pounds of fat per cow.

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At Frankford, Ont., the average increase in ten herds between 1912 and 1914 is 1,655 pounds of milk and 67 pounds of fat per cow.

At Avonmore, Ont., nine herds show substantial increases: one herd of twelve cows is now up to an average of 7,982 pounds of milk per cow, compared with only 6,200 pounds, or an increase of 1,782 pounds per cow.

At Mallorytown, Ont., a herd of twelve cows has increased from 3,726 pounds of milk per cow in 1909 to 7,388 pounds in 1914. This is an increase of 3,662 pounds of milk per cow, or 98 per cent.

At St. Hyacinthe, Que., the increase of 156 cows in fifteen herds after three years amounts to the total value of \$2,232.72.

There are twenty herds at Scotsburn, N.S., that show extraordinary increases in the last six years, some as high as 200 per cent. Yields that were undreamed of by men who were more interested in lumbering than dairying are now used as stepping stones to still better results.

At St. Prosper, Que., are fourteen herds that show good increases since 1912. For instance, in one herd the average yield per cow in 1912 was 4,644 pounds of milk, 5,984 pounds in 1913, and 6,454 pounds in 1914. This is an increase of 1,810 pounds of milk per cow, or 38 per cent.

An example of good steady herd improvement, full of encouragement for every dairyman, comes from Frankford, Ont. The yield of each cow for three consecutive years is shown.

1912.		1913.		1914.	
Pounds milk.	Pounds fat.	Pounds milk.	Pounds fat.	Pounds milk.	Pounds fat.
6,720	226.4	7,799	272.5	8,338	279.1
6,572	207.0	6,580	223.5	7,189	254.6
5,392	179.7	6,005	229.5	7,531	254.3
5,917	195.2	6,430	223.6	6,825	241.4
6,102	193.6	6,404	210.0	6,416	218.1
6,600	213.7	6,420	219.9	7,384	259.8
6,767	201.5	7,509	254.3	8,100	278.3
4,892	162.4	6,665	215.3	8,163	266.3
3,552	102.8	6,065	208.5	7,889	257.0
5,235	191.0			6,528	237.6
Total yield 57,809	1,874.3	59,777	2,057.1	74,363	2,546.5

In 1912, the average yield per cow was 5,780 pounds milk, 3.2 test, 187.4 pounds fat.
 In 1913, " " 6,611 " 3.8 " 228.5 "
 In 1914, " " 7,436 " 3.4 " 254.6 "

Increase from 1912 to 1913, per cow, 861 pounds milk, 41.1 pounds fat.
 " 1913 " 1914, " 795 " 26.1 "
 " 1912 " 1914, " 1,656 " 67.2 "

The owner of this herd states he is more than pleased with the work, he is aiming for at least 9,000 pounds of milk and 300 pounds of fat per cow.

CHAS. F. WHITLEY.

OTTAWA, March 31, 1915.

APPENDIX V.

DAIRY HERD RECORDS IN ONTARIO.

During 1914 the dairy herd record movement was conducted on the same general plan as in former years. Fifteen record centres were in operation, the following being a list of the same together with the name of the recorder in charge and the county in which the centre is situated:—

Centre.	Recorder.	County.
Listowel.....	Jas. R. Burgess.....	Perth.
Ingersoll.....	Ed. J. McMulkin.....	Oxford.
Frankford.....	J. B. Lowery.....	Hastings.
Peterborough.....	Wm. Weir.....	Peterborough.
Kingston.....	H. B. Smith.....	Frontenac.
Mallorytown.....	J. C. Raphael.....	Leeds.
Oxford Mills.....	Freeman Brown.....	Grenville.
Avonmore.....	Alfred Street.....	Stormont.
Alexandria.....	Allan Macdonell.....	Glengarry.
Perth.....	W. W. Echlin.....	Lanark.
North Gower.....	Thos. J. Hicks.....	Carleton.
*Cornwall.....	A. L. Andress.....	Stormont.
*Hallville.....	J. E. Dougall.....	Dundas.
*Renfrew.....	D. Muirhead.....	Renfrew.
*Sunderland.....	Jas. Glendinning.....	Ontario.

*Began operations in 1914.

In addition to the above, records were received from several associations, as well as from a considerable number of individual dairymen in various parts of the province. Records of 7,522 cows, comprising 760 herds, passed through the recorders' hands, the total number of tests made being 57,239. It may be mentioned here that these figures do not fully represent the extent of the cow testing or herd record work in Ontario, as a large number of farmers are keeping private records upon forms supplied by the Dairy Division, copies of which are not forwarded to the department.

Dairy herd records are yearly becoming more popular among progressive dairymen, and through their successes the interest of the more indifferent is being slowly aroused.

One of the greatest obstacles to the more general adoption of cow testing by farmers is the lack of properly qualified and sufficiently interested persons to do the testing. It has always seemed to the writer that if this work is ever to be made general, it must be done through the medium of the cheese and buttermakers. The cheese factory or creamery is a natural centre for such work. Unfortunately, a very large percentage of the makers are either unable to test milk, or are not sufficiently interested to bother with it. Many factories are not equipped with testing outfits. These conditions prevent many farmers from reaping the benefits of the work. In practically every community are to be found men who are ready to keep records and samples, were they only provided with means of having the testing properly done. Occasionally farmers are found who do their own testing, which is an ideal way of carrying on this work, as it furnishes a pleasant diversion from the routine duties of the farm, and has a tendency to develop self-reliance and independence.

The continuance of the widespread practice of paying for milk in cheese factories by the "pooling system" is another factor which tends to retard the practice of testing the individual cows. "What use is it when I am paid for my milk by the hundred?" is the pointed question frequently asked. Lack of dependable farm help is another excuse offered by very many farmers for not taking up the work.

It may not be out of place here to mention the milking machine and its probable effect upon the keeping of herd records. Some machines milk two cows into one receptacle, and it is therefore impossible to get the weight, or a sample of each cow's milk. Even if the milk is drawn into a separate vessel from each cow, the fact that many cows have to be "stripped" or finished by hand after the machine, makes the getting of the proper weight and a representative sample of each cow's milk somewhat difficult, and frequently leads to mistakes. Some men have discontinued keeping records after installing milking machines. Others have resorted to hand milking for the days upon which weights and samples are being taken, rather than be deprived of accurate records of their individual cows. The manufacturers of mechanical milkers will do well to consider some solution of this apparent difficulty.

Breeding and selection are important factors in the building up of a dairy herd, and it is encouraging to note an increasing demand for pure-bred sires, and also that more buyers are asking for animals which are backed by reliable, official records, a precaution too frequently neglected in the past. This change in the attitude of buyers is due in no small measure to the efforts of the recorders and others in impressing upon dairymen the importance of record keeping, and to the assistance rendered in locating and selecting good sires. It is to be regretted that many good sires are disposed of for beef before their offspring have been proven or tested; while on the other hand, many poor sires are not sent to the block soon enough. It is a mistake not to test the heifers at the first opportunity.

Many of the members of the record centres who are keeping pure-bred cattle have become interested in official records, and in not a few cases has cow testing proved the stepping stone to the Record of Performance and other official tests.

Continued improvement is shown in the dairy stables throughout Ontario, many new stables being comfortable and well lighted; but, unfortunately, in too large a proportion of cases no attention has been paid to any system of ventilation, the natural result being that a large number of stables otherwise first-class are stuffy and foul smelling, which cannot but be detrimental to the health and productive ability of the cows, as well as to the quality of the milk produced.

While there is evidence of considerable improvement from the standpoint of production among the cows of Ontario, it might be well to point out some of the weaknesses in herd management as practiced among the dairy farmers of this province. Generally speaking, we are not growing milk-producing foods in large enough quantities. A large percentage of cows are underfed during the winter months, and the result is that very many herds are turned out in the spring in poorer condition than when stabled in the fall; consequently, the maximum flow of milk is much lower and extends over a shorter period than it otherwise would. That it pays to feed liberally is proven by our dairy census figures, where almost invariably it is found that the greater the cost of feed per cow, the less the cost of producing 100 pounds of milk or 1 pound of fat.

The recorders have been active in encouraging the holding of dairy contests at rural fall fairs. Considerable success has attended their efforts, and much interest has been taken by dairymen and the general public in this new feature. Dairy contests were held last year at Woodstock, Renfrew, Perth, Alexandria,

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Belleville, Frankford, and Peterborough. Already preparation is being made by several other fair boards to hold similar contests at the coming autumn exhibitions.

The recorders are sometimes inclined to be discouraged at the comparatively small percentage of dairymen who can be persuaded to take up record keeping. They meet with further disappointment when a number of those who do start fail to continue and, for one reason and another, drop out at or before the end of their first year. However, the outlook at present is more encouraging and indicates that 1915 will see substantial additions to the ranks of record-keeping dairymen. One noteworthy feature is that some who dropped out a year or two ago are starting in again, having realized that they made a mistake in discontinuing.

By no magic wave of the hand can poor cows be turned into good cows. It takes time, patience, and good judgment to build up and maintain a herd of cows, the individuals of which are producers of big profits.

H. W. COLEMAN.

Supervisor of Cow Testing for Ontario.

PERTH, ONT., March 31, 1915.

APPENDIX VI.

DAIRY HERD RECORDS IN QUEBEC.

I have the pleasure to present my first report as supervisor of cow-testing work in Quebec. This report covers a period of fifteen months, from the 1st of January, 1914, when I took up my present duties, to the 31st of March of this year.

I hesitated at first to undertake the work on account of the difficulties which had to be overcome, but I made up my mind to do so after a careful study of its possibilities, and of the results obtained in this country and also in foreign countries like Denmark and Switzerland. I decided to put all my energy into the work and I have found it very interesting and satisfactory; interesting, because I am convinced that cow-testing will greatly increase the profits of the farmers of Quebec, and give a new impetus to dairying; satisfactory, because the number of men testing their cows has markedly increased. Four new record centres were established in 1914, viz., in the counties of L'Islet, Montmagny, Bellechasse, and Lac St. Jean, in addition to the six centres previously organized. The complete list was as follows:—

Location.	Recorder.	P. O. Address.
L'Islet.	A. Tremblay.....	St. Aubert.
Montmagny.	L. E. Cote.....	Montmagny.
Bellechasse.	J. S. Cinq Mars.....	St. Raphael.
Lac St. Jean.	J. E. Hadon.....	Metabetchouan.
St. Hyacinthe.	A. Hamel.....	St. Hyacinthe.
Champlain.	F. X. Trudel.....	St. Prosper.
Stanstead.	F. J. Wilkinson.....	Way's Mills.
Pontiac.	R. W. Hodgins.....	Shawville.
Dorchester.	A. Lavallee.....	Ste. Claire.
Beauce.	A. Laborte.....	St. Georges Est.

There are, in addition to the ten record centres, thirty cow testing associations where the testing is being done by the owner or manager of the local cheese factory or creamery. There are 164 members in these small associations, and the number of cows under test is 1,689.

The results of the cow-testing work, which I have studied in the various districts in order to prepare this report, show that the people are well pleased everywhere. They are quite ready to go on with the work which has already proved to be profitable, and we can confidently expect a large number of new members in all the centres, and several new associations will be organized.

Judging by the requests for information received from the farmers, the factory owners, and the cheese and butter-makers, there is a growing interest in the cow-testing work. This is due to the general propaganda, the results obtained by the first members, the good work of the recorders, and the attention given to this question by the St. Hyacinthe dairy school, the schools of agriculture at Ste. Anne de la Pocatière and Oka, and the domestic science schools at

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Roberval and St. Paschal. I was invited to visit all these institutions, for the purpose of advocating cow-testing which subject is now a regular item of the programme in class and practical work. It is also taught by the agricultural missionaries of Quebec.

A milking competition was organized this year by the Quebec Exhibition Association, and the competition which has been so popular at the Sherbrooke exhibition for a number of years, was conducted as usual with the assistance of F. J. Wilkinson, of the Stanstead record centre. The cow-testing work has also been included in the experimental programme of the Junior Farmers' Association for 1915. To all these we give our best thanks. Their valuable co-operation gives me the hope that great results will be achieved in agriculture and dairying by means of this movement.

The Quebec recorders, in addition to their regular work, made themselves useful by helping the farmers: (a) to improve their herds by a better system of breeding, and (b) to increase their profits by more judicious feeding, with a greater variety of and better-balanced rations. They keep continually in touch with the Experimental Farms, and being well informed and earnest men, they can make themselves useful in a thousand different ways, by calling attention to many different things.

Cow-testing has also greatly helped the French Acadians of Nova Scotia at Clare and Meteghan in Digby county. The rapid development of the dairy industry in that part of the country is really wonderful, considering the difficulties encountered.

My ambition is that the province of Quebec should have as large a number of cow-testing dairymen as Ontario, and an average yield of milk, fat, and money per cow, not only equal but superior, if possible.

J. B. E. TRUDEL,

Supervisor of Cow Testing for Quebec.

LAC À LA TORTUE, QUE., March 31, 1915.

APPENDIX VII.

DAIRY HERD RECORDS IN THE MARITIME PROVINCES.

This work continues to expand with excellent results in the dairy record centres previously established, and a good start made with bright prospects for future development in the three new centres opened at Crapaud, Truro and Antigonish. A greater interest is being taken in the weeding out of unprofitable cows, the care and feeding, also improved breeding through the use of pure-bred sires. A number of sections will have an opportunity this year for the first time to use pure-bred sires from Record of Performance dams. The results in some sections from the use of *registered pure-bred scrub bulls* have been detrimental to the work of herd improvement; this is an evil some breeders of pure-bred stock should take note of and apply the remedy.

The creameries on Prince Edward Island that have co-operated with us in forwarding the work by offering prizes to their patrons making the highest averages of butter-fat per cow, are evidently satisfied with the results, as the prizes are offered again this year, and at one creamery the amount provided is double that of last year.

The Provincial Department of Agriculture in Nova Scotia is assisting in extending the work, and is providing Babcock testers free to any student from the Agricultural College, Truro, residing in the province, who is in a position to take up cow testing in his local district.

The Provincial Department of Agriculture in New Brunswick is also offering assistance this season by furnishing outfits and defraying expenses in connection with collecting samples at outlying sections in the Woodstock district.

As an indication of the increased interest in the work, we have received a great many petitions, in some cases containing signatures of over sixty farmers, also from agricultural societies and farmers' clubs asking for record centres in new districts. We have been able to make provision to carry on the work in many of these districts by extending the centres already established, and arranging with qualified creamery-men and others to assist the recorders in doing the testing.

The following figures taken from the secretary's books at one of our largest cheese factories give a fair idea of what is being done under average conditions:—

AVERAGE Milk and Butter-fat per cow delivered to Cheese Factory. June 1 to October 31 in 1912-13-14, by two patrons who are cow-testing.

Herds.	1914			1913			1912		
	Number Cows.	Average Milk.	Average Fat.	Number Cows.	Average Milk.	Average Fat.	Number Cows.	Average Milk.	Average Fat.
		lb.	lb.		lb.	lb.		lb.	lb.
A	5	6,092	231.96	5	5,412	202.64	5	5,100	193.25
B	11	4,118	160.87	10	3,561	141.25	9	3,543	136.19

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In herd A we have an increase of 992 pounds of milk and 38.71 pounds of butter-fat per cow in the three years: with fat at 27 cents per pound this gave the owner an increased return of \$47.25 from his five cows. Herd B shows an increase of 575 pounds of milk and 24.68 pounds of butter-fat per cow; this gave him an increased return from his herd of \$73.29.

Every dairyman can make the same increase in his returns by making use of the information he can acquire through cow-testing.

I have devoted some time to starting new cream routes in Prince Edward Island and assisting Mr. McKay, Dairy Superintendent for Nova Scotia, in new creamery districts. The new creamery at Wellington, P.E.I., did a good business handling cream from about one hundred farmers, and the Dunstaffnage central creamery have about doubled their output in the last two years through cream coming in via rail from routes organized in the eastern end of the island, where it has been found unprofitable to operate small cheese factories. Over one hundred new patrons, well pleased with the returns they received, will have a good influence on this branch of the work for next season.

The new creameries at Baddeck, Stellarton, and Bridgewater, in Nova Scotia, did a good business: the two latter continued to make butter during the winter, something unusual for a new creamery the first year, in the Maritime Provinces.

My work in New Brunswick was confined entirely to cow-testing.

There has been a decided increase in the output of creamery butter and a slight falling off in the make of cheese in the three provinces during the year.

HARVEY MITCHELL.

CHARLOTTETOWN, P. E. I., March 31, 1915.

APPENDIX VIII.

REPORT OF THE COLD STORAGE INSPECTOR.

The Cold Storage industry in Canada has developed to such an extent that there are now some 128 warehouses, with approximately 25,000,000 cubic feet of refrigerated space available in public and private warehouses. This does not include refrigerating installations in retail stores or butcher shops, provision, fruit, fish stores, and dairies, which are quite numerous in cities and towns all over the Dominion.

Under the Cold Storage Act, of 1907 subsidies to the extent of 30 per cent of the cost of constructing and equipping warehouses have been given to companies or individuals in every province, and public warehouses have been erected in communities where cold storage facilities were very much needed.

As inspector of subsidized warehouses, it has been my duty to visit all plants at least once, and many of them several times during the year. I am pleased to report that as a general thing these warehouses are maintained in a high state of efficiency and with one or two exceptions where conditions might be improved, the public are receiving an excellent service in the storage of all kinds of produce. A large percentage of the warehouses are operated at one-half to full capacity, while several have been forced to enlarge their cold storage space and, in some cases, their equipment to accommodate the increasing business.

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The following is a complete list of subsidized cold storage warehouses erected since 1907:—

Name.	Total Refrigerated Space.	Cost.	Total Subsidy.
	Cu. ft.	\$	\$
<i>Alberta.</i>			
Campbell & Hamilton, Calgary.....	111,059	90,000 00	27,000 00
Edmonton C. S. Company, Edmonton.....	150,056	157,000 00	45,000 00
<i>British Columbia—</i>			
The B. Wilson Co., Victoria.....	1,000	75,000 00	22,500 00
The Canadian Fish and C. S. Co., Prince Rupert.....	781,000	100,000 00	105,000 00
H. & K. Trading Co., Penticton.....	32,164	33,000 00	9,900 00
<i>Manitoba—</i>			
The Brandon Cry. and Supply Co., Brandon.....	27,500	32,000 00	9,600 00
<i>New Brunswick—</i>			
The New Brunswick C. S. Co., St. John.....	744,000	167,000 00	50,100 00
Cold Storage Limited, Woodstock.....	37,161	25,577 00	7,673 10
<i>Nova Scotia—</i>			
The Lockport C. S. Co., Lockport.....	59,940	55,850 18	17,055 05
North Atlantic Fisheries, Pt. Hawkesbury.....	104,000	200,000 00	60,000 00
The Halifax C. S. Co., Pt. Hawkesbury.....	75,000	30,786 00	9,117 00
The Halifax C. S. Co., Pt. Hawkesbury (Burned 1913).....			
<i>Ontario—</i>			
Scott & Hogg, Peterborough.....	90,000	14,500 00	4,150 00
The J. D. Moore Co., St. Marys.....	105,000	36,019 62	10,805 88
London & St. Catharines.....	33,600	20,000 00	6,000 00
The Chatham Fruit Growers Assn., Chatham.....	50,000	19,350 00	5,845 00
O'Keefe & Drew Abbatoir Co., Chatham.....	144,400	53,741 45	16,122 43
*The Palmerston C. S. Co., Palmerston.....	169,984	35,000 00	10,500 00
The Trenton Cooperage Mills, Ltd., Trenton.....	140,446	50,919 41	15,275 82
The St. Lawrence Produce Co., Brockville.....	106,000	52,000 00	15,600 00
Flavells Ltd., Lindsay.....	131,510	53,000 00	15,900 00
Gunns Ltd., Harriston.....	57,069	38,877 30	11,603 10
The St. Thomas C. S. Co., St. Thomas.....	174,141	123,700 00	37,110 00
The Brantford C. S. Co., Brantford.....	36,000	29,600 00	8,880 00
The Whyte Packing Co., Mitchell.....	30,600	21,000 00	6,300 00
Algoma Produce Co., Sault Ste. Marie.....	55,806	67,000 00	20,100 00
<i>Prince Edward Island—</i>			
Island C. S. Co., Charlottetown.....	150,000	50,000 00	15,000 00
<i>Quebec—</i>			
The Dominion Fish & Fruit Co., Quebec.....	225,000	222,845 22	68,872 06
J. H. Sansregret, Joliette.....	23,394	22,444 10	6,733 23
<i>Saskatchewan—</i>			
Moosejaw C. S. Co., Moosejaw.....	189,764	90,000 00	27,000 00
City C. S. Co., Regina.....	100,672	48,257 00	14,477 10
H. G. G. Co., Yorkton.....	24,000	22,450 00	6,735 00
	1,183,877	2,282,515 97	684,754 75

*Only one instalment of \$5,250 paid on Palmerston warehouse

A contract was entered into with J. H. Early, Saskatoon, Sask., in 1913, which was afterwards assigned to the Saskatoon Cold Storage Company. The warehouse has not yet been completed and, on application of the company, an extension was granted, allowing them until October 1, 1915, to complete the warehouse. Further contracts have been entered into with R. H. Ashton, Morrisburg, Ont., for the erection of a warehouse at Morrisburg, Ont., and with Mathews and Scott, Queensport, N.S., for one at Sydney, N.S.

CREAMERY COLD STORAGE BONUSES.

There were fifty-four applications for creamery cold storage bonuses received during the year. Of this number, forty-five were approved and received the full bonus of \$100. In the other nine cases the conditions were not complied with.

LIST of Creameries that Received the Bonus in 1914-15.

Name of Creamery.	Name of Proprietor, Secretary or Manager.	P.O. Address.	County.
<i>Quebec.</i>			
Ste. Victoire Village.....	J. Desjardins.....	Ste. Victoire.....	Richelieu.
St. Prosper.....	O. Lariviere.....	Quatre Chemins....	Dorchester.
Wotton Village.....	E. Simoneau.....	Wotton.....	Wolfe.
Rang St. Pierre.....	E. Malca.....	St. Benoit Labre...	Beauce.
St. George Beauce.....			
Co-operative Society, St. Pierre Brough- ton Village.....	D. Roy.....	West Broughton.....	Megantic.
Idry.....	O. Lapalme.....	Bury.....	Compton.
St. Jean de Dieu Village.....	E. Dumont.....	St. Jean de Dieu....	Temiscouata.
St. Robert.....	A. Brouillard.....	Bellevue Junction...	Richelieu.
St. Mathias Village.....	A. Belzile.....	St. Mathieu.....	Rimouski.
Ayer's Cliff.....	A. E. Fish.....	Ayer's Cliff.....	Stanstead.
St. Pierre les Becquets, Village.....	L. Sauvageau.....	St. Pierre les Becquets.....	Nicolet.
Saint Alexis, Rang St. Benoit.....	J. A. Gagnon.....	St. Benoit de Matapedia.....	Bonaventure.
St. Francois (Beauce).....	P. Thibodeau.....	Riviere Gilbert Gold Mines.....	Beauce.
Rang Victoria.....	D. Rocheleau.....	St. Didace.....	Maskinonge.
St. Flavie.....	J. Rioux.....	Mont Joli.....	Matane.
St. Luce.....	A. Rioux.....	Neigette.....	Rimouski.
Cote de Roche.....	L. Amiot.....	Ste. Angele.....	Matane.
3rd Rang, Ste. Croix.....	D. Blouin.....	Potvin.....	Lotbiniere.
Rang St. Francois (Lotbiniere).....	E. Rivard.....	Paradis.....	Lotbiniere.
St. Jean l'Evangeliste.....	J. A. Allard.....	Nouvelle West.....	Bonaventure.
Ste. Genevieve Village, north side.....	E. Jacob & Sons....	Ste. Genevieve de Batiscan.....	Champlain.
St. Germain, Village.....	L. A. Levesque.....	St. Germain de Kamouraska.....	Kamouraska.
St. Omer.....	Rev. J. A. St. Laurent.....	St. Omer.....	Bonaventure.
St. Omer Village (St. Ephrem Beauce).....	G. Thibodeau.....	Petit Village.....	Beauce.
No. 3 Syndicate Village.....	A. Bernier.....	Cap St. Ignace.....	Montmagny.
St. Honore de Shenley.....	A. Fortier.....	St. Honore.....	Beauce.
Sayabec, Village.....	L. Gagnon.....	Sayabec.....	Matane.
St. Victor de Tring Village.....	S. Fortin.....	St. Victor de Tring.	Beauce.
(St. Joseph Range St. Francois Beauce....	J. Thibodeau.....	Beauceville East...	Beauce.
No. 1 Syndicate Village.....	N. Roy.....	Amqui.....	Matane.
Rang Ste. Marguerite.....	E. Poulin.....	St. Georges.....	Beauce.
Vill. Brillant, Village.....	A. A. Nicole.....	St. Simon.....	Rimouski.
St. Hubert.....	J. Ouellet.....	Lamy.....	Temiscouata.
<i>Manitoba.</i>			
Carberry.....	Carberry Cry. Co. W. Jardine.....	Carberry.....	Sec. 30, Tp. 10, R. 14, W. of 1st M.
Rapid City.....	Rapid City Cry. Assn. C. G. Murray	Rapid City.....	Sec. 20, Tp. 13, R. 12, W. of 4th M.
<i>Saskatchewan.</i>			
Bow City.....	Bow City Cry. Co. S. R. Wallace....	Oxbow.....	Sec. 23, Tp. 3, R. 3, W. of 2nd M.
Cudworth.....	Cudworth Cry. Co. Chas. D. Spani..	Cudworth.....	Sec. 31, Tp. 40, R. 26, W. of 2nd M.

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List of Creameries that Received the Bonus in 1914-15—*Concluded.*

Name of Creamery.	Name of Proprietor, Secretary or Manager.	P. O. Address.	County.
<i>New Brunswick.</i>			
Madawaska.....	Maxime Albert....	Albertine.....	Madawaska
Evangeline.....	L. C. Daigle.....	St. Louis.....	St. Hilaire Parish. Kent St. Louis Parish.
<i>Nova Scotia.</i>			
South River.....	The South River Cry. Co., John T. Keating....	Loch Katrine.....	Antigonishe.
Baddeck.....	Nova Scotia Dept of Agriculture, W. A. Mackay.....	Baddeck.....	Victoria, C.B.
La Have.....	La Have Cry. Co..	Bridgewater.....	Lunenburg.
Pictou County Dairy.....	Pictou Co. Dairy Co., H. Falconer..	Stellarton.....	Pictou.
Cumberland Co-operative.....	Cumberland Co- operative Co., W. A. Landels.....	River Hebert...	Cumberland.
<i>Prince Edward Island.</i>			
Wellington.....	Wellington Dairy Co R. F. Gaudet.....	Wellington.....	Prince.

Bonuses paid since the year 1897—914 creameries have received a total of \$82,625.25.

JOSEPH BURGESS,
Cold Storage Inspector.

OTTAWA, March 31, 1915.

APPENDIX IX.

REPORT OF THE CHIEF INSPECTOR OF DAIRY PRODUCTS.

The inspection of dairy products has been carried on during the past year by a staff of six inspectors, five of whom were engaged in this work during only a part of the year.

Mr. R. G. L. Clarke, Chief Dominion Fruit Inspector for the province of British Columbia, devoted some time to the inspection of dairy products in that province.

Mr. Thos. E. Davis, of Winnipeg, was engaged in the inspection of dairy products throughout the provinces of Manitoba, Saskatchewan, and Alberta, from the beginning of the year until the latter part of November.

The late Mr. D. M. Macpherson, of Lancaster, Ont., spent the greater part of the time from the first of the year until he became ill in December, in inspection work in Ontario. After September 1, Mr. Macpherson gave special attention to the branding of dairy and whey butter. Mr. Macpherson also did some work in the city of Montreal.

Mr. J. G. Bouchard, of Ottawa, has, during the past year, devoted about four months' time to the work of inspection, the greater part of this time being spent in the city of Montreal.

Mr. L. P. Bernard, of Granby, Que., has given some assistance, particularly in the inspection of the branding of butter in Montreal.

The writer has, during the year, made two trips throughout the West, visiting all the principal cities in the four western provinces. Two trips of inspection have been made through the Maritime Provinces. The remainder of the writer's time has been spent on inspection work in Ontario and Quebec.

METHOD OF INSPECTION FOR ADULTERATION

The Dairy Industry Act requires that the fat of butter be genuine milk fat, and that the butter contain not more than 16 per cent of water. Butter containing fats other than milk fat, or more than 16 per cent of water is considered to be adulterated.

The percentage of water in butter may be determined fairly accurately by means of any one of several different mechanical appliances or testers which are on the market. One of these testers is carried by each inspector. In inspecting butter, samples of different brands are secured from manufacturers and from wholesale and retail merchants. Each sample when secured is placed in a glass jar and given a serial number. A report form, bearing the same number as the jar, is filled in, giving the names and addresses of the manufacturer and the vendor, the brand and the date of sale. The percentage of water in the sample is determined by the inspector on the same day that the sample is secured. If the percentage of water as shown by the inspector's test is in excess of sixteen, or if it is suspected that the butter is adulterated by foreign fats, two further samples are secured. About one-quarter pound of the suspected butter is placed in each of two screw-top glass jars which are securely sealed with wax and a seal provided by the department for this purpose. A label,

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properly filled in to show the name of the vendor, place and date of sale, is gummed to each jar. One of these sealed jars containing a sample of the suspected butter is left with the vendor, in order that he may have an analysis made by an independent analyst, if he sees fit. The other sealed sample is taken by the inspector and, if the sample has been secured in Ontario or Quebec, it is submitted for analysis to the Inland Revenue Department at Ottawa. Samples taken for analyses in provinces other than Ontario and Quebec, are submitted to the provincial analyst of the province in which the samples are secured, or to some properly qualified city analyst.

All samples examined during the past year for adulteration by means of foreign fats have proved to be genuine.

When a sample suspected of containing over 16 per cent of water is submitted for analysis, and the findings of the analyst substantiate the results of the preliminary test of the inspector, a prosecution follows if the circumstances seem to warrant such a proceeding.

While a wholesale or a retail merchant is liable under the law for selling or having in his possession for sale, butter containing over 16 per cent of water, it does not necessarily follow that a prosecution is taken against such a vendor. As a general rule, a first prosecution is taken against the manufacturer only. If this prosecution against the manufacturer does not have the desired effect, and the butter continues to exceed the legal limit of water, further prosecutions would then be taken against as many vendors as possible, who handle this particular brand, as well as against the manufacturer. Proceeding against retail merchants in this manner is, for apparent reasons, most effective in preventing violations of the law by manufacturers.

Preliminary tests of 2,007 samples of butter have been made during the year. One hundred and eighty, or slightly less than 9 per cent of the samples tested contained over 16 per cent of water. The water content of these 180 samples varied from 16.1 per cent to 38.1 per cent.

When a sample of butter is found to contain more than 16 per cent of water, several other samples of the same brand are secured, if possible, to determine whether or not the water content of the particular brand is uniformly high. Thus of the 180 samples which exceeded 16 per cent, in several cases two or more tests were of the same brand.

Only occasionally is a sample of dairy butter found to contain over 16 per cent of water, and in such cases it is usually evident from the quality of the butter that the high water content is due to faulty methods of manufacture rather than to any intent to defraud; that is, the methods used in the making have not only incorporated a high percentage of water, but have ruined the body and texture of the butter. In such cases, the proper course would seem to be not to prosecute, but to instruct the maker how to overcome the difficulty by employing proper methods of manufacture. This has been done in all cases in which the maker was known.

Merchants who buy dairy butter from farmers cannot always say who has made a particular lot of butter which may be in their possession for sale. Since the merchant is responsible not only for the water content of the butter in his possession, but also for the weights of the blocks or prints, every merchant should, as a matter of self protection, devise some system of identifying the maker of all the butter which he handles.

Thirty-seven prosecutions on account of excess of water have been taken during the past year against manufacturers, wholesale and retail merchants, and convictions were secured in all cases. In all cases except one, fines varying from \$10 to \$200 together with costs of prosecution were imposed.

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The extent to which the public may be defrauded by excess of water in butter is not properly appreciated by most consumers. Assuming that butter contains 16 per cent of water—the maximum allowed by law—and that such butter is selling at 30 cents a pound:—

If butter containing 16 per cent of water is worth 30c. a pound
 Butter containing 20 per cent of water is worth only $28\frac{4}{10}$ cents a pound
 Butter containing 25 per cent of water is worth only $26\frac{1}{10}$ cents a pound
 Butter containing 30 per cent of water is worth only $24\frac{8}{10}$ cents a pound
 Butter containing 35 per cent of water is worth only 23 cents a pound
 Butter containing 38.1 per cent of water is worth only $21\frac{9}{10}$ cents a pound

Thirty-eight and one-tenth per cent of water was the highest test during the year. In purchasing 1 pound of such butter for 30 cents, the consumer is defrauded to the extent of $8\frac{1}{10}$ cents, and the person incorporating the excessive water has, to the same extent, an illegitimate profit.

INSPECTION OF WEIGHT OF PRINTS OR BLOCKS OF BUTTER.

The subsection of the Act dealing with the weight of prints or blocks of butter requires that they be “of the full net weight of one-quarter pound, one-half pound, one pound or two pounds at the time they are moulded or cut.” This allows for a reasonable shrinkage, due to evaporation of water, which does not in any way defraud the consumer.

The work of inspecting the weight of prints or blocks of butter is done at the same time as the taking of samples for water determination.

The preliminary inspection of the weight of prints or blocks of butter is made on the scales of the vendor. In the event of the prints or blocks being short in weight to a greater extent than may be explained by evaporation of water, the manufacturer or cutter is for a first offence usually let off with a warning. In case a warning does not secure the desired results, and the brand of butter complained of continues to be short in weight, two or more prints are purchased, wrapped in paper, tied, and sealed. They are then taken to a public weigher or some other disinterested party, who breaks the seal, unwraps and weighs the blocks. If the second weighing confirms the results of the first weighing, a prosecution follows.

The responsibility for prints or blocks of butter being short in weight rests with the manufacturer or cutter thereof, and he alone profits thereby. As a consequence, most prosecutions on account of short weight blocks or prints have been against the manufacturer or cutter of the same.

A retail merchant, having in his possession for sale, blocks of butter which have been under weight at the time they were moulded or cut, is guilty of negligence in not inspecting the weights of the same, or in accepting them from a manufacturer, or from a wholesaler, knowing them to be short in weight. The sooner the retail dealers of the country appreciate their responsibility in this matter, the sooner will this form of fraud disappear. In this respect, retail dealers will be dealt with more strictly in the future than they have been in the past.

Proceedings have been taken against three cutters of prints or blocks of butter, and against one retail merchant on account of short weight, and fines, varying from \$15 to \$50, together with the costs of prosecution were imposed.

Prints or blocks of butter have been found to weigh as low as 12 ounces instead of 16 ounces, as required. If butter is selling at 30 cents a pound, a print weighing 15 ounces at time of cutting, if sold for 30 cents, costs the consumer at the rate of 32 cents per pound, while a 14 ounce print sold for 30 cents, costs the consumer $34\frac{2}{3}$ cents per pound.

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THE BRANDING OF BUTTER AND CHEESE.

Creamery Butter.—The regulations do not require that creamery butter be branded as such, but they do require that it shall not be branded in any manner that shall give false information as to the creamery in which it was made. Several violations of this regulation have been observed during the year. In all cases except one, the offenders were let off with a warning. In this one case a prosecution was taken, a conviction secured, and a fine of \$10, together with the cost of prosecutions, imposed.

Dairy Butter.—Dairy butter, as defined by the Act, is the product of less than fifty cows.

The regulations require that when dairy butter is packed in boxes similar to those used for the packing of creamery butter, the words "dairy butter" must be stencilled on the side of the box in letters not less than one-half inch long and three-eighths of an inch wide, and that when dairy butter is put up in the form of prints or blocks and wrapped in parchment paper the paper must be printed or branded with the words "dairy butter" in letters at least one-quarter inch square. It is not required that dairy butter in rolls, crocks, or tubs be branded.

The work of inspection of branding of dairy butter is carried on at the same time as that of inspecting for excessive water and short weights. Notwithstanding all the publicity given the regulations, it was found after September 1, 1914, that very little dairy butter was being properly branded. In October a circular (The Branding of Dairy Butter, No. 12, Dairy and Cold Storage Series) was prepared. Copies of this circular have since been supplied to every merchant called on who wished the same for distribution among his customers. In all, 25,000 copies of Bulletin No. 42, Dairy and Cold Storage Series, The Dairy Industry Act., 1914, and Regulations, and 100,000 copies of Circular No. 12 have been distributed during the year. The distribution of these circulars has been effective, and in some sections of the country practically all dairy butter is now properly branded. The number of inquiries received from all parts of the country for information regarding the branding of dairy butter indicates that the information has been widely spread. The makers of dairy butter are complying with the law as rapidly as could reasonably be expected, and before long practically all dairy butter should be properly branded.

Branding Dairy Butter as Creamery.—Twenty-three cases of farmers branding dairy butter as creamery have come under the observation of the different inspectors. In every case the offender has expressed ignorance of the law and has promised to comply with the regulations in future.

Whey Butter.—The regulations require that every package containing whey butter or a mixture of whey butter and dairy butter, or of whey butter and creamery butter, shall be branded at the time of packing with the words "whey butter". In the case of boxes or tubs, the lettering must be applied on the side of the package and must be at least one-half inch long and three-eighths of an inch wide. In the case of parchment paper wrappers and cartons, both of which must be branded, the lettering must be at least one-quarter inch square.

Early in the summer a copy of Bulletin No. 42 was sent to every cheese factory and creamery in Canada. One hundred and sixteen cheese factories were engaged in the manufacture of whey butter last year, all located in that part of Ontario lying east of Toronto. Eighty-two factories were visited, and the product of ten other factories was inspected in various stores. In several cases one man owned two or more factories which were engaged in the manufacture of whey butter. In such cases a visit to the owner served our purpose as well as

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visiting each of his several factories. This will largely account for the fact that while 116 factories were making whey butter, only ninety-two inspections were made.

The results of the inspection were as follows:—

Twenty-two factories were branding properly.

Eight factories were branding as “creamery.”

Two factories were branding as “choice butter.”

The remainder were not branding in any way.

In every case where the branding was not carried out as required by the law, the manager of the factory was informed as to what was necessary, and he was warned that the regulations would be enforced. One manufacturer ignored the warning and continued branding his whey butter as “creamery.” Two actions were taken against this man; one on account of using the word “creamery” on butter which was not creamery butter within the meaning of the Act; and the other on account of not branding whey butter as such. Two convictions were secured and a fine imposed in each case.

Skim-milk Cheese.—The regulations require that every cheese made wholly or in part from or by the use of skim-milk, shall be branded on the side of the cheese with the words “skim-milk cheese”; also every box or package containing such cheese shall be branded on the outside of the box or package with the words “Skim-milk cheese”; the lettering in both cases to be at least one-half inch long and three-eighths of an inch wide. These provisions are the same as in part viii of the Inspection and Sale Act, except that the size of the lettering has been reduced.

Three factories in Ontario were at times during the past year engaged in the manufacture of skim-milk cheese. These were each visited on one or more occasions, and a warehouse receiving cheese from two of the factories was also visited. At all times, such cheese and the boxes containing the same were found to be properly branded.

THE VERIFICATION OF GLASS WARE USED IN CONNECTION WITH MILK TESTS.

During the past year twenty creameries and city dairies were visited to ascertain if properly verified glassware was being used in connection with the Babcock milk test. In thirteen of these places the glassware was found to be all properly marked. In the remaining seven plants, all or part of the glassware had not been verified and marked. The managers of these places were supplied with copies of Circular No. 2, Dairy and Cold Storage Series, entitled “The Milk Test Act.” Subsequently five of these seven places were again visited and it was found that all had in the meantime complied with the law.

This line of work will receive more attention in future from inspectors of dairy products.

PROSECUTIONS.

In all, forty-four offences have been prosecuted during the year. Convictions have been secured in all cases and, in all cases except one, fines have been imposed varying from \$10 to \$200, together with the costs of prosecution.

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The following is a list of those who have been convicted:—

Name.	Address.	Offence.
Archambault, Sergius.....	Montreal, Que.....	Selling butter containing over 16 per cent of water.
Bell & Sons, J. T.....	Medicine Hat, Alta.	"
Bergl & Kusch.....	Regina, Sask.....	"
Brandon Creamery & Supply Co.	Brandon, Man.....	"
"	"	"
"	"	"
Brandon Produce Co.....	"	"
"	"	"
Braun, & Co., D. E.....	Edmonton, Alta....	"
Burnash, J. F.....	Kingston, Ont.....	Not branding whey butter as such.
"	"	Using word "Creamery" on whey butter.
Christie, A. R.....	Winnipeg, Man.....	Selling butter containing over 16 per cent of water.
Crescent Creamery Co.....	Brandon, Man.....	"
D... .., L... ..	Montreal, Que.....	"
"	"	Selling butter branded so as to give false information as to creamery in which it was made.
Edmonton City Dairy.....	Edmonton, Alta....	Selling butter containing over 16 per cent of water.
"	"	"
"	"	Selling butter in prints which were not of the full net weight of one pound at the time they were cut.
Enterprise Dairy Co.....	"	Selling butter containing over 16 per cent of water.
"	"	"
Guaranteed Pure Butter Co...	Montreal, Que.....	Selling butter in prints which were not of the full net weight of one pound at the time they were cut.
Latourelle, Leopold.....	"	Selling butter containing over 16 per cent of water.
"	"	"
"	"	"
"	"	"
"	"	"
"	"	"
"	"	Mixing water with butter.
Lazare, Armand.....	"	Selling butter containing over 16 per cent of water.
"	"	Selling butter in prints not of the full net weight of one pound at time they were cut.
Matheson & Urquhart.....	Vancouver, B.C.....	Selling butter containing over 16 per cent of water.
"	"	"
Mathie, G. A.....	Brandon, Man.....	"
Melita Creamery.....	Melita, Man.....	"
Ouellette, E.....	Montreal, Que.....	"
Parsons Haddock Co., Ltd...	Vancouver, B.C.....	"
Rees & Brigden.....	Brandon, Man.....	"
Richie, D. A.....	Winnipeg, Man.....	"
Schnier, Abraham.....	Montreal, Que.....	Selling butter in prints which were not of the full net weight of one pound at the time they were cut.
Smith & Burton.....	Brandon, Man.....	Selling butter containing over 16 per cent of water.
"	"	"
Tousignant, David.....	Montreal, Que.....	"
"	"	"
Young, W. J.....	Brandon, Man.....	"
"	"	"

As the work goes on it would seem that prosecutions should become less numerous. The work of inspection of dairy products should prevent the necessity of prosecutions. It is in the best interests not only of the consumer, but also of the honest manufacturer and trader that conditions be kept such that numerous prosecutions will be unnecessary. This condition may be secured only by constant and efficient inspection.

J. F. SINGLETON,
Chief Inspector of Dairy Products.

OTTAWA, March 31, 1915.

APPENDIX X.

REPORT OF THE FRUIT COLD STORAGE AND TRANSPORTATION INVESTIGATIONS DIVISION.

The season of 1914 was one of organization as well as execution of policies for this division. When the writer received his appointment in charge of this division on May 1, 1914, the experimental fruit storage and pre-cooling plant at Grimsby was nearing completion; a large part of the equipment had been ordered and was being installed. At this time fruit prospects were such as to indicate only a very light crop, with relatively small quantity for shipment to the western provinces; peaches promised to be a total failure in yield, which prediction was verified as the season advanced. With these facts in view, the Grimsby plant was made ready to handle only about one-fourth of its total capacity, and to be used more as a commercial service for initiating the practice of pre-cooling in this district rather than for extensive commercial investigations. These arrangements were made previous to the first carload shipments of fruit, which came with the sour cherry season in July.

While the policy at the commercial end of the investigations was to thoroughly demonstrate the advantages of refrigeration in fruit transportation by making very low rates to the shippers in the vicinity, the short fruit crop gave the management a very good opportunity to inaugurate scientific investigations dealing with the leading varieties of fruit in the district held under different conditions of refrigeration.

The fruit marketing conditions in the Niagara Peninsula are somewhat different from those in any other fruit district in Canada. This is especially true when it comes to co-operating with the different marketing factors for the handling of long-distance experimental shipments of fruit. Some growers market their own fruit, shipping direct to the consumer, retailer or wholesale trade; others ship through fruit companies or semi-co-operative organizations (there are a few strictly co-operative organizations); while the larger percentage of growers depends upon the local fruit shipper to come along from day to day and bargain for the whole or a part of his crops in their season. There are from three to twelve local shippers at each shipping point. The larger part of their business is made up from small orders coming from retailers all over Eastern Canada to whom weekly quotations are sent by the various shippers, the shipments being made by express. If a shipper purchases more fruit than he has orders for, the balance is expressed to a wholesale house to be sold on commission. The larger part of the western shipments are handled by the local buyer, and are made partly by express to fill the small orders of the retailers and partly by refrigerated freight either on consignment or to meet f.o.b. sales to wholesale houses.

These marketing conditions are far from satisfactory, and result in chaotic conditions nearly every year. The nature of the competition of the local shippers is such as to hold back orders for lower prices at a time when retailers in Eastern Canada should be selling fruit. Western markets prefer to buy fruit from the United States, since by the system of marketing in the Niagara peninsula no assurance is to be had as to the merchantable condition of the purchase. With conditions such as these it makes it necessary for the department to purchase practically all of its fruit for experimental shipments, since with an

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ungoverned system of marketing, such as exists in this district, the condition of the fruit making up commercial shipments is so variable as to vitiate any investigational records that might be undertaken.

To adapt the government pre-cooling plant to the marketing system in the Niagara district it was necessary to evolve a receiving system to accommodate both shippers and growers. It was necessary to deal with the shipper for the pre-cooling of carloads of fruit and at the same time it was necessary to receive the fruit direct from the orchards and the hands of the growers. Consequently the department accounted to both the grower and to the shipper for all fruit being pre-cooled, and charged direct to the shipper on all shipments made.

The initial experimental shipment made from Grimsby was in connection with Montmorency cherries in July. An abundance of Early Richmond and Montmorency cherries are grown in the Niagara district, and low prices rule in eastern markets. During the last season no shipper was prepared to ship a carload of pre-cooled cherries by refrigerated freight to western markets, consequently the department bought a carload consisting of 2,277 six-quart baskets of cherries and ten crates of raspberries, the cherries being purchased for 37½ cents per basket. On account of rains it required three days to assemble and pre-cool the fruit, and the refrigerator car furnished by the transportation company was of the brine-tank type which is the poorest for fruit shipments, so that the shipment was being made under the worst of conditions. The fruit was shipped on July 16, being consigned to the Scott Fruit Company, Winnipeg. The fruit arrived at its destination July 22 in perfect condition, and sold for 60 cents per basket in Winnipeg markets. Freight, icing, and commission charges amounted to \$423.74.

The remarkable condition of this trial car of cherries led the wholesale firm to state that another year they could handle several cars of cherries, were they in as good a condition. The results from this single car of cherries show the large possibilities in developing western markets for Ontario tender fruits through suitable methods of handling and transportation.

The commercial use of the Grimsby plant was encouraged by making very low rates, which were as follows:—

<i>For Pre-cooling—</i>		Cents.
Eleven-quart baskets, forty-eight hours or less.....		1
Six-quart baskets, forty-eight hours or less.....		3½
Half-pea boxes, forty-eight hours or less.....		1½
<i>For Storage—</i>		
Eleven-quart baskets, one month or less.....		2½
Six-quart baskets, one month or less.....		1½
Half-pea boxes, 1 month or less.....		2
Apples in barrels, one month or less.....		15
Apples in barrels, winter season.....		15
Apples in boxes, one month or less.....		5
Apples in boxes, winter season.....		15
Minimum charge.....		25

The above rates were revised at the end of the season, and new rates will apply for the season of 1915.

The shippers of the vicinity took advantage of the low rates and during the season thirty-nine cars of pre-cooled fruit were handled. These consisted largely of plums, pears, and tomatoes. Not a single shipment of peaches was made. In addition to the pre-cooling the plant was used to a large extent by growers who wished to hold small lots of fruit a few days for a better market. Four and one-half cars of raspberries were held in storage for a short period. In the early apple season, 1,500 baskets were held to extend the market period. In the case of the pre-cooled fruits, two cars were made up wholly of pears for export which could not have been shipped on account of war conditions had not cold storage facilities been available. Some 2,348 boxes and 780 barrels of apples were held in storage for winter, as well as 17 tons of cabbage.

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In every case where fruit was in proper shipping condition, the best of results followed and large profits realized, making the shippers enthusiastic over the advantages of having access to such facilities. The money which may be saved by fruit growers using refrigeration was well shown in the case of the raspberry-crop, which is one of the less important crops of the district. By holding berries that were too ripe for market shipment for the use of jam factories, over \$3,000 was saved in one week.

The experimental work for the season was confined chiefly to making observations as to the effect of different degrees of refrigeration upon the tender fruits of the Niagara district. Three different temperatures were used: 32°, 38° and 45° F. The following fruits and varieties were studied during the season: *Strawberries*, Williams; *Cherries*, Governor Wood, Early Richmond, Montmorency; *Gooseberries*, Columbus (European), Downing (American); *Black Currants*, Prince of Wales; *Red Currants*, Red Dutch; *Blackberries*, Lawton; *Blueberries*, Canada; *Raspberries*, Cuthbert; *Plums*, Washington Gage, Yellow Egg, Reine Claude, Bradshaw, Grand Duke; *Tomatoes*, Earliana, Chalk's Jewel, Danish Export; *Grapes*, Niagara, Concord, Agawam, Lindley, Wilder, Catawba, Vergennes.

In addition to these investigations, other lines of observations were being carried on to secure information regarding the rate of cooling of different fruits, and the effect of different rates of cooling. No attempt will be made to give any of the results of the above experiments in this report, since the experiments are not complete until supplemented by the results of future work.

The work of the past season has suggested a number of new lines of work, some of which will be attempted during the coming season. This is to include a more complete line of commercial transportation investigation with pre-cooling, careful handling and the development of improved packages.

The work performed during the first year reflects much credit upon the able assistance of Mr. George L. Fischer, scientific assistant for the season, upon the co-operation of the branch of the Fruit Commissioner, and upon the support given all projects by different officers of the branch.

EDWIN SMITH,

In charge Pre-cooling and Experimental Fruit Storage Warehouse.

GRIMSBY, ONT., March 31, 1915.

APPENDIX XI.

REPORT OF THE INSPECTOR OF WEIGHING OF BUTTER AND CHEESE.

I have the honour to submit my first annual report as inspector of weighing of butter and cheese, which covers the period from May 19, 1914, to March 31, 1915.

In presenting this report I shall make it as brief as possible, stating only the most prominent facts that come to my attention.

During the months under review I have weighed cheese and butter from or at 256 factories, and have tested the weights of 1,209 samples of cheese and 420 samples of butter. I have received verbally or in writing eighty-five requests with which I have been unable to comply, partly owing to my absence from the city, testing weights in the country, and partly because the goods in question had already been shipped from Montreal when such requests came to me. However, in all cases where the cheese or butter was in Montreal warehouse I have responded promptly by weighing such goods to the best of my ability.

I have replied to 174 letters, in most cases giving the test weights of butter and cheese which had been referred to. To Ottawa, forty-three reports were sent from time to time, covering the work done in different counties and districts, including Montreal.

I have visited over eighty factories, and in fifty-five of these the scales weighed incorrectly, were in faulty or defective condition, or improperly balanced or levelled. In one case I found a half-pound weight made of lead by the maker himself to replace a proper one that had been lost. This weight, when tested in Montreal, weighed 3 grams less than the correct weight. In some cases I found scales totally unfit for the weighing of butter and cheese.

In twenty-five of the factories visited the scales were found to be in good working condition, and in several cases, although the cheese was not properly weighed it was due more to the neglect of the maker or person appointed to do the weighing in not giving sufficient allowance of half a pound up and above the balance of the beam to ensure good weights.

I was called 128 times to warehouses in Montreal, either by salesmen or merchants, to test the weights of butter or cheese, and in all cases I have answered promptly when in the city or, if out of town, I have attended to these requests at once upon my return.

As soon as a demand or complaint came to my knowledge from either an exporter, salesman, maker, or proprietor, I immediately took my scale to the warehouse where the goods were, and after testing the weights, if the discrepancies were 2, 3, 4, or 5 pounds different from the weights marked on the box or the actual weights of the cheese or butter, I then proceeded to the factory as soon as possible, so as to trace the cause of such difference, to remedy same if possible, and to put the maker on a proper footing to weigh correctly.

In places where the cheese were still on the shelves, I had the maker place his scale in the actual position that he was in the habit of using when doing the weighing. Then we weighed the cheese on his scale and reweighed them on my

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Another example of five cheese made June 8, weighed at factory June 15, and reweighed in Montreal June 27, showed the following results:—

	lb.	oz.			lb.	oz.		lb.	oz.
June 15.	86	—	Reweighed June 27	.....	86	15	Shrinkage	1	1
" 15.	86	4	" "	.....	85	3	"	1	2
" 15.	88	2	" "	.....	87	—	"	1	2
" 15.	89	8	" "	.....	82	10	"	—	8
" 15.	87	—	" "	.....	86	—	"	1	—

The maker, who at the same time was the owner of the factory, told me that for the past twelve years he has been the proprietor of this factory, and no person ever came around to inspect his scale. Even the outside of this scale looked neat and clean enough, but the inside and parts underneath were very dirty and rusty, and it took a half pound weight to move the beam properly. I could refer to dozens of scales of the same character, but will proceed on to other points; for instance, showing an example of live cheese weighed on a cheese factory scale and reweighed immediately afterwards on my beam showing a difference of one-half to one pound for each cheese, which shows clearly the irregularity and defects of such scales.

Cheese Factory Scale.			My Own beam.		
lb.	oz.		lb.	oz.	Pounds.
88	4	Reweighed	87	4	1
87	4	"	86	4	1
82	—	"	81	4	1
81	8	"	81	—	1
82	—	"	81	8	1

Below follows an example of cheese weighed a long distance from Montreal (Chicoutimi district), loaded in a box car, in transit for a full week, and reweighed in Montreal eight days afterwards, showing the necessity of giving cheese that have to stand such conditions not less than 3/4 to 1 pound allowance, if O.K. weights are desired to be obtained at Montreal.

WEIGHED AT SHIPPING POINT.		REWEIGHED IN MONTREAL EIGHT DAYS AFTERWARDS		
Marked Weight.	Actual Weight.	lb.	oz.	oz.
lb.	lb. oz.			
79	80 —	79	12	Shrinkage..... 4
81	82 —	81	8	" 8
84	84 12	84	4	" 8
81	82 —	81	8	" 8
83	84 —	83	12	" 4

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Another sample showed practically the same result:—

lb.	lb. oz.	lb. oz.	oz.
75	—	74 8	Shrinkage..... 8
78	12	73 4	"..... 8
68	12	68 4	"..... 8
86	8	85 —	"..... 8
67	—	67 8	"..... 8

It must, however, be remembered that the above cheese were shipped in closed tight box cars during very hot weather.

The conclusion arrived at from tests, such as the above, is that when cheese are a week or so in transit, the normal shrinkage will be not less than three-quarters to one pound by the time they reach Montreal.

The following is another example of cheese shipped from only a short distance out of Montreal, well cured, and weighed in St. Jovite on the 15th of the month, three days before shipment, and reweighed here on the 22nd of the month:—

lb. oz.	lb. oz.	RESULT.
81 4	81 4	O. K.
82 —	82 —	O. K.
81 12	81 8	Shrinkage 4 oz.
80 —	80 —	O. K.
80 4	80 4	O. K.

Shrinkage in one week only one-quarter of a pound. This, I think, was very satisfactory.

REWEIGHING OF BUTTER.

One example of butter weighed at the shipping point shows how short weights occur in some cases:—

Gross.	Tare.	Net Weight	lb. oz.
lb. oz.	lb. oz.	lb. oz.	
63 8	7 8	56 —	Straight beam is..... 55 1
62 12	7 4	55 8	" "..... 55 1
66 12	7 4	55 8	" "..... 55 1
63 4	7 5	55 15	" "..... 55 1
63 —	7 —	56 —	" "..... 55 1

According to the rules and custom of the trade, these five boxes had lost one pound each before leaving shipping point.

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GREEN CHEESE.

With reference to green cheese, I would say that during my travelling in the country I have been to certain factories where only three cheese were left on the shelves, and others where no cheese could be found in the factory, except what was in the presses.

The reason the makers gave me for this was, that as the neighbouring factories were shipping green, they were compelled to do the same in order to keep up with them.

The conclusions to be drawn from the work accomplished during the season are that the losses and shrinkages are particularly due to the same causes as mentioned in the report of the Royal Commission, viz:—

1. Use of cheap inferior scales at factories, giving false weights.
2. Carelessness in weighing and marking, and ignorance in the use of scales.
3. The shipping of green cheese, in which there is excessive shrinkage.

In closing this, my first report, I desire to state that at all times when copies of certificates were requested from the public weigher (Mr. John McLeod) he always showed himself ready to supply me with same. In cases where I had occasion to weigh the same cheese as Mr McLeod had weighed I never found any errors in his figures.

J. E. D. GAREAU,

Inspector of Weighing of Butter and Cheese.

MONTREAL, QUE., March 31, 1915.

APPENDIX XII.

SOME STATISTICS OF THE EXPORT AND IMPORT TRADE IN DAIRY PRODUCE.

TOTAL EXPORTS OF CHEESE AND BUTTER in Fiscal Years 1880 to 1915, inclusive.

Butter.			Cheese.		
Year.	Quantity.	Value.	Year.	Quantity.	Value.
<i>Year ended June 30.</i>	Lb.	\$	<i>Year ended June 30.</i>	Lb.	\$
1880	18,535,362	3,058,069	1880	40,368,678	3,893,366
1890	1,951,585	340,131	1890	94,260,187	9,372,212
1891	3,768,101	602,175	1891	106,202,140	9,501,800
1892	5,736,696	1,056,058	1892	118,270,052	11,652,412
1893	7,036,013	1,296,814	1893	133,946,365	13,407,470
1894	5,534,621	1,095,588	1894	154,977,480	15,488,191
1895	3,650,258	697,476	1895	146,004,650	14,253,002
1896	5,889,241	1,052,089	1896	164,689,123	13,956,571
1897	11,453,351	2,089,173	1897	164,220,699	14,676,236
1898	11,253,787	2,046,686	1898	196,703,323	17,572,763
1899	20,139,195	3,700,873	1899	189,827,839	16,776,765
1900	25,259,737	5,122,156	1900	185,984,430	19,856,324
1901	16,335,528	3,295,663	1901	195,926,397	20,696,951
1902	27,855,978	5,660,541	1902	200,946,401	19,986,281
1903	34,128,944	6,954,618	1903	229,099,925	24,712,943
1904	24,568,001	4,724,155	1904	233,980,716	24,184,566
1905	31,754,303	5,930,379	1905	215,733,259	20,300,500
1906	34,031,525	7,075,539	1906	215,834,543	24,433,169
<i>Year ended Mar. 31.</i>			<i>Year ended Mar. 31.</i>		
1907 (9 months)	18,078,508	4,011,609	1907 (9 months)	178,141,567	22,006,584
1908	4,786,954	1,068,703	1908	189,710,463	22,887,237
1909	1,326,355	1,521,436	1909	164,907,139	20,384,606
1910	4,615,380	1,010,274	1910	180,859,886	21,607,692
1911	3,142,682	744,288	1911	181,895,724	20,739,507
1912	8,844,402	2,077,916	1912	163,450,684	20,888,818
1913	828,323	223,578	1913	155,216,392	20,697,144
1914	1,228,753	309,046	1914	144,478,340	18,868,785
1915	2,724,913	639,625	1915	137,601,661	19,213,501

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DETAILED EXPORTS OF DAIRY PRODUCTS for year ended March 31, 1915.

To all countries.	Quantity.	Value.
Cheese..... Lb.	137,601,661	19,213,501
Butter..... " "	2,724,913	639,625
Condensed milk..... Lb.	18,355,975	1,181,300
Cream..... " "	230,045	13,923
Fresh milk..... Gal.	477,692	68,205
Total value.....		22,952,560

COMPARATIVE VALUE OF DETAILED EXPORTS for Years ended March 31, 1910, 1911, 1912, 1913, 1914 and 1915.

	1915.	1914.	1913.	1912.	1911.	1910 .
Cheese.....	19,213,501	18,863,785	20,427,144	20,623,818	20,739,507	21,607,692
Butter.....	639,625	309,046	223,578	2,077,916	744,288	1,010,272
Condensed milk.....	1,181,300	666,941	25,534	305,678	469,406	
Fresh milk.....	68,205	47,645	1,412	975	4,276	341,372
Cream.....	1,836,006	1,289,680	751,123	792,687	1,714,528	
Casein.....	13,923	11,071	15,342	38,302	37,009	
	22,952,560	21,193,168	21,714,153	24,101,376	23,709,014	23,159,336

EXPORTS TO UNITED STATES—Values of Dairy Products Exported to the United States during the Years ended March 31, 1909, 1910, 1911, 1912, 1913, 1914 and 1915.

	1915.	1914.	1913.	1912.	1911.	1910 .	1909.
Cheese.....	39,461	187,335	41,366	31,653	29,004	23,995	10,423
Butter.....	263,541	111,894	75,192	103,319	91,313	199,854	18,248
Condensed milk.....	945,189	301,177	5,107	3,983	11,474	220,446	8,256
Cream.....	13,923	11,071	15,342	38,302	37,009		
Fresh milk.....	68,205	47,645	1,412	975	3,257		
	3,171,325	1,948,777	889,542	971,327	1,893,615	445,295	45,930

Down to the beginning of the fiscal year 1911, the exports of fresh milk, cream, condensed milk and casein were included under one head in the Trade and Navigation returns.

STATEMENT OF EXPORTS OF BUTTER by Countries in Fiscal Years, 1905 to 1915 inclusive, (Years ended June 30, 1905 to 1906; Years ended March 31, 1907 to 1915).

To	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.
Great Britain.....	\$ 5,568,999	\$ 6,802,003	\$ 3,805,925	\$ 822,761	\$ 1,273,484	\$ 587,493	\$ 401,621	\$ 1,769,510	\$ 173	\$ 31,950	\$ 150,612
British West Indies.....	80,323	87,085	59,313	85,371	95,370	76,026	70,444	54,665	26,004	26,970	41,710
British Guiana.....	8,929	11,654	8,113	12,861	7,711	9,497	10,682	4,865	1,772	5,578	3,861
Other British Possessions.....				5		544	1,423	86	188	560	956
Newfoundland.....	82,387	48,283	56,516	34,931	54,552	50,074	57,195	76,691	62,943	79,669	121,548
China.....	562	761	5,041	1,319			985	158	223	69	194
Cuba.....	658	285	1,054	720	96	22	1,438	2,155	1,158	1,456	1,719
Danish West Indies.....	4,475	4,560	3,664	4,939	4,418	4,697					
Germany.....						9,777					
Japan.....	6,496	9,373	9,062	4,258	3,019	1,002	840	210			20
St. Pierre and Miquelon.....	21,827	17,668	17,615	18,749	14,740	14,036	18,560	8,216	12,561	13,497	17,368
United States.....	70,580	33,965	3,539	38,899	18,246	199,854	91,313	103,819	75,192	111,894	208,541
British Africa.....	4,914	2,056	265		22,458	1,873	10,460	2,596			
Mexico.....		1,268	484	265	660	936	59	171	31		840
U. S. Colombia.....	200	1,747	2,145		1,105	832		69		3,860	2,232
Bermuda.....	50,482	47,045	33,900	33,177	14,273	43,638	54,665	41,209	33,677	25,606	24,568
France.....	14,440	4,155									
Holland.....	13,680										
Belgium.....	116									10	126
Central America.....	1,062	3,431	4,932	9,448	7,074	2,500	3,948	3,268	2,890	3,212	921
Korea.....	15					15					
Dutch Guiana.....	186	30	40			48					
Turkey.....	50		21								
Porto Rico.....		170									
Panama.....					4,229	7,320	19,881	10,000	5,420	3,715	4,888
Austria-Hungary.....					1						
Alaska.....							771	498	746		21
Totals.....	5,930,379	7,075,539	4,011,609	1,008,703	1,521,436	1,010,274	744,288	2,077,916	223,578	309,046	639,625

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STATEMENT OF EXPORTS OF CHEESE by Countries in Fiscal Years 1905 to 1915 inclusive (Years ended June 30, 1905 to 1906;
Years ended March 31, 1907 to 1915).

To	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Great Britain.....	20,174,211	24,300,908	21,909,878	22,763,736	20,268,166	21,481,566	20,577,542	20,733,064	20,497,195	18,533,880	18,936,704
Australia.....	5,411	5,350	245	525	223	171	88	58	448	569	213
British Africa.....	10,612	16,623	18,261	16,362	12,466	16,425	22,601	26,873	28,100	26,128	73,009
B. W. Indies.....	36,176	25,509	13,666	27,533	26,940	24,035	25,844	26,259	24,164	25,900	21,283
B. E. Indies.....	62	20									
British Guiana.....	2,571	3,860	3,143	6,228	4,452	5,232	4,747	7,872	6,975	8,581	14,765
Other British Possessions.....				9	1	1,011	1,575		24	1,145	3,050
Hong Kong.....	1,079	1,029		851	2,452	733	1,077	1,407	3,335	1,912	2,830
New Zealand.....	1,642	1,795	1,690	1,362	54	1,267	467	645	385	449	
Newfoundland.....	35,171	30,992	37,748	35,792	41,163	36,912	39,855	44,435	63,900	50,414	68,522
Belgium.....	22	287		2,080			1				15,000
Cuba.....	102	811		57		17	419	53	852	324	73
China.....	2,013	2,195	2,206	1,572	568	756	1,040	1,302	1,305	987	1,569
Danish West Indies.....	2,046	2,056	1,568	1,985	1,937	2,453	2,148	2,704	2,416	4,666	4,009
France.....	700	7,203		10	81		5,534	38	2,331		
Japan.....	759	775	1,071	1,444	2,200	1,208	2,700	1,419	2,392	3,697	2,007
St. Pierre and Miquelon.....	341	875	318	190	364	311	338	274	390	295	682
United States.....	14,182	16,082	6,900	17,732	19,428	23,995	36,034	31,653	41,366	187,335	39,461
Norway and Sweden.....	104	994									
Germany.....	364		54	3		102					
Bermuda.....	12,505	14,033	9,080	9,245	3,174	11,385	1,126	10,494	20,738	20,397	26,478
Dutch Guiana.....	18	13	9								
Mexico.....	329	1,594	630	168	499	108	72	56	26		
French West Indies.....									55		
Central America.....	80			347	3		112			6	
Holland.....		97	110								
U. S. of Colombia.....		68							23	570	
Other countries.....				6		5	142	212	724	1,530	3,846
Totals.....	20,300,500	24,433,169	22,006,584	22,887,237	20,384,666	21,607,692	20,739,507	20,888,818	20,697,144	18,868,785	19,213,501

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CHEESE IMPORTS INTO THE UNITED KINGDOM, from British Trade Returns,
Years ended December 31.

From	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Canada.....	1,698,847	1,541,502	1,566,546	1,607,064	1,473,275	1,352,570	1,293,768	1,167,778
United States.....	114,300	105,555	54,617	38,247	150,321	21,227	22,449	31,396
Netherlands.....	241,551	279,401	285,329	231,832	207,917	268,286	292,134	339,124
New Zealand.....	192,301	264,995	368,531	453,785	397,845	543,917	547,182	742,419
Other countries...	125,234	114,633	115,067	125,427	118,964	122,787	142,046	143,161
Total.....	2,372,233	2,306,086	2,390,090	2,456,340	2,348,326	2,308,787	2,297,579	2,423,872
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Canada.....	71.7	66.8	65.5	65.5	62.7	58.6	56.3	48.2
United States.....	4.8	4.6	2.3	1.6	6.4	0.9	1.0	1.3
Netherlands.....	10.2	12.1	12.0	9.4	8.9	11.6	12.7	13.9
New Zealand.....	8.1	11.5	15.4	18.5	16.9	23.6	23.8	30.7
Other countries...	5.2	5.0	4.8	5.0	5.1	5.3	6.2	5.9
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

BUTTER IMPORTS INTO THE UNITED KINGDOM from British Trade Returns,
Years ended December 31.

From	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Russia.....	657,549	639,118	601,712	584,040	638,284	683,650	751,414	616,380
Sweden.....	226,740	238,929	312,142	345,684	360,357	335,014	332,331	270,138
Denmark.....	1,818,811	1,857,103	1,764,027	1,726,091	1,707,178	1,618,048	1,706,759	1,749,071
Germany.....	7,297	3,195	2,965	3,481	.....	.....	.....	.....
Netherlands.....	168,496	244,356	148,567	154,537	104,655	113,716	153,172	183,990
France.....	281,306	394,612	413,306	361,249	171,080	246,652	248,579	273,819
United States.....	1,063	39,540	693	756	23,052	2,596	164	7,844
Australia.....	598,986	409,106	384,619	639,093	874,399	541,253	588,399	433,801
New Zealand.....	313,863	221,395	278,581	362,674	276,446	349,012	251,663	357,920
Canada.....	34,753	47,877	22,522	16,805	61,936	27	813	3,151
Other countries...	101,192	115,590	133,699	131,129	85,305	115,191	105,728	87,794
Total.....	4,210,156	4,210,821	4,062,833	4,325,539	4,302,692	4,005,159	4,139,022	3,983,921
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Russia.....	15.6	15.2	14.8	13.5	14.8	17.1	18.2	15.5
Sweden.....	5.4	5.7	7.7	7.9	8.4	8.4	8.0	6.8
Denmark.....	43.2	44.1	43.4	39.9	39.7	40.4	41.2	44.1
Germany.....	0.2	0.1	0.07	0.09	.....	.....	.....	.....
Netherlands.....	4.0	5.8	3.7	3.9	2.4	2.8	3.7	4.6
France.....	6.7	9.7	10.1	8.4	4.0	6.1	6.0	6.9
United States.....	0.03	0.9	0.01	0.01	0.5	0.0	0.0	0.2
Australia.....	14.2	9.5	9.5	14.7	20.3	13.6	14.2	10.8
New Zealand.....	7.5	5.3	6.9	8.3	6.4	8.7	6.1	8.9
Canada.....	0.8	1.1	0.6	0.3	1.4	0.0	0.0	0.0
Other countries...	2.4	2.6	3.3	3.0	2.1	2.9	2.6	2.2
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

N.B.—1914 figures unrevised.

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IMPORTS OF DAIRY PRODUCE, for Consumption in Canada, during the Years ended March 31.

	1910.	1911.	1912.	1913.	1914.	1915.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Cheese.....	683,778	866,653	919,189	1,495,758	1,512,108	1,162,465
Butter.....	393,582	1,227,390	3,874,587	7,989,269	7,317,259	6,822,549
Condensed milk.....	256,124	173,309	133,365	261,555	453,417	120,845

IMPORTS OF BUTTER BY COUNTRIES during the Years ended March 31.

Country.	QUANTITIES.					
	1910.	1911.	1912.	1913.	1914.	1915.
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Great Britain.....	6,161	29,252	700,900	767,131	91,900	66,259
Australia.....	299,440	438,870	101,640	98,112	227,602	226,856
New Zealand.....	21,840	464,951	2,139,944	6,018,022	6,732,155	4,993,508
Turkey.....	240	167	165	.....	1,882	.....
United States.....	61,081	293,937	929,318	1,100,431	262,840	1,534,332
Other countries.....	4,820	213	2,620	5,573	880	1,585
Totals.....	393,582	1,227,390	3,874,587	7,989,269	7,317,259	6,822,540

